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A STUDY ON VĀSTUVIDYĀ

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TARAPADA BHATTACHARYYA

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A STUDY
ON
VĀSTUVIDYĀ
OR
Canons of Indian Architecture

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PREFACE

The book is the fruit of my labour as Research Scholar of the Government of Bengal during the years 1923—1926, when I was deputed to the Varendra Research Society, Rajshahi, to work under the Late Akshaya Kumar Maitra, C. I. E. But the researches made by me in that capacity represents a very small fraction of what is to be found in the present volume. Many new books on *Vastuvidya* have since been discovered, and it is with the help of these that I have been able to trace the development of *Vastuvidya* and allied subjects. I shall be failing in my duty if I do not at the very outset acknowledge the debt I owe to the Government of Bengal, to the V. R. Society of Rajshahi and to the Late Gurudeva A. K. Maitra for their kindly affording me opportunity to study the subject.

In writing the book I had to struggle against odd circumstances, such as the difficulty in securing a good Press and untold domestic difficulties. Notwithstanding them I have rushed through in the hope that the materials I have been able to collect and collaborate would be placed before the world of letters so that I may, if necessary, revise my opinions in the light of any criticisms I may receive. Inspite of my best efforts, there have crept into the book a number of mistakes, some of which have been duly corrected in the attached list of errata.

I must acknowledge my debt to Prof. S. G. Mukherjee, M. A. of the B. N. College, Patna, for having very kindly gone through a portion of the Manuscripts. I also should thank the United Press of Patna for making their best efforts to print the book quickly and for the accommodating spirit and consideration they have invariably shown.

I shall deem my labour amply repaid if the world of scholars is attracted to the study of this important, but so long neglected, branch of Indian culture, and offer helpful and constructive criticisms.

PATNA
January 1947.

T. P. B.

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INTRODUCTION

The Indian *Vastusastra* or the Canons of Indian Architecture is a field of study in which very few scholars have worked in India or outside. Ram Raz was the first to draw the attention of scholars to this very important branch of Indian *Vidyas*. He was followed by Dr. P. K. Acharya whose contributions have been monumental. The publication of the *Manasara* and the Dictionary of Hindu Architecture has thrown further light on the subject. Dr. Coomaraswamy, Prof. K.R. Pisharoti, Mr. O.C. Gangooli, Dr. Stella Kramrisch and several other scholars have widened the bounds of our knowledge.

From the time of Ram Raz to this day most of the workers in this subject have concentrated their attention on only those texts on *Vastuvidya* which have been discovered in Southern India, the reason being that most of the available books on the subject have come from the South. In Northern India, topics relating to *Vastuvidya* were found in fragmentary form in the Puranas, and a few books of the 'Pratishtha class or 'Nibandhas'. It is only recently that North Indian works wholly dealing with *Vastuvidya* have been discovered. Of them *Samarangana Sutradhara* is the most remarkable. Many mss. are still to be found in both the northern and the southern parts of India which should be critically edited. I have had the opportunity of consulting the mss. of *Hayasirsapancharatram* which is in possession of the V.R. Society, Rajshahi, which has been only partly printed. This is an invaluable North Indian work on *Vastuvidya* and needs a critical edition.

The absence of such books, therefore, had long prevented scholars from tracing the development of this branch of Indian culture. Dr. Acharya came to the conclusion that all the works on *Vastuvidya*, North or South Indian, were based on *Manasara*. Such conclusions cannot be upheld now. Though the dates of

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many of these available works are unknown, we have now been able to fix some landmarks from where we may move backward and forward to find out the antiquity of the Indian *Vastusastras*. *Brihat Samhita* (composed in the 6th century A.D.), *Samarangana Sutradhara* of the 11th century A. D. and *Isana-Siva-Gurudeva-Paddhati* of the 11th century A. D. (because we know from South Indian Inscriptions that *Isana-Siva-Gurudeva* was the preceptor of king Rajendra Choladeva I (1012-42) of the Chola dynasty) have helped us now to form a chronology of the history of the *Vastusastras*. The origin of Indian *Vastusastra*, the different phases of its development, the relation of the North Indian *Vastuvidya* to that of the South, the relation of the Southern texts to one another and probable age of compilation of the various texts which form the main theme of this book, as far as I know, have not yet been discussed by any scholar. Many scholars have attempted to apply these canons to the interpretation of actual specimens of Indian architecture. But as they so long depended on *Manasara* and other allied South Indian texts, and as the technical terms used in these works have not yet been properly interpreted, they generally failed in those attempts. Similarly, many have attempted to classify Indian architecture; but even Dr. Coomaraswamy could not definitely make out the real thing from the confused and vague statements of the available works. I have therefore, tried properly to interpret the three terms 'Nāgara', 'Drāviḍa' and 'Vesara' and to find out the real classes or orders into which the Indians themselves divided their architecture.

The method I have followed is first to make an analytical study of the references to Indian architectural matters available in various Indian works, and then to build up a theory. In the first nine chapters, therefore, I have collected the important references from the works of the Vedic period and those of later periods. This has been done by many previous writers, but, as will be noticed, I have paid more attention to the references which may help us to trace the gradual development

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of *Vastuvidya*. Scholars have so long held that *Vastuvidya* developed in India in the third century or in the sixth century A. D. But I have shown in Chapter X that long before that period, India had produced at least twenty five writers on *Vastuvidya*, whose works, though lost to us, existed in India till at least the 10th century A. D. Then an attempt has been made to reveal the nature of *Vastuvidya* in the earliest period (Ch. XI). I have tried to show that *Vastuvidya* existed in India even in the Second Century B. C. (Date of Garga). The development of *Vastuvidya* has then been traced from the earliest period to the 15th century A. D. (chaps. XII—XIII) and in this connection I have also attempted to fix the probable dates of some of the available texts on *Vastuvidya*. I have further shown that the sixth century was a significant period in the history of *Vastuvidya*, most of the available works having been composed in that period or the one following it.

The discussion about the age of compilation cannot be complete without a proper consideration of the matters dealt with in the various works. I have not thoroughly entered into the technical matters of Architecture which only can supply proper data for reaching definite conclusions regarding this matter. But I have proceeded by classifying the various styles (or orders) of Indian architecture and the treatises thereon. Scholars have hitherto recognised three orders of Indian architecture—viz. Nāgara, Drāviḍa and Vesara ; but I have shown that this division is partially faulty and that there were various other orders of Indian architecture. These classifications have been dealt with in several chapters (XIV to XVI).

These classifications have thrown new light on the question of the age of the compilation of many of the available treatises. As Dr. Acharya regarded *Manasara* as the source of all the works on *Vastuvidya*, I have shown (Chap. XVII) that *Manasara* has really very little in common with other available texts, and that *Manasara* belonged to the Southern school and was a late compilation. The date of this valuable work has further been

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discussed in the following chapters (XVIII to XIX). A suggestion has been made regarding the reasons of the similarity between *Manasara* and the work of Vitruvius, the Roman writer on architecture. These chapters have further shown that there were two principal schools of Indian *Vastuvidya*—the Northern and the Southern, a fact which has not yet been definitely proved by any scholar. The points of similarity and difference between these two schools have been next traced (ch. XX). The points of similarity have been found to be due to the fact that all the Indian schools of architecture followed common fundamental principles which are essence of Indian architecture. These principles have been summarised in chapter XXI.

In the next few chapters I have tried to indicate how far these architectural principles were actually followed by the Indian builders. In this connection I have developed the theory regarding temples, which was held by Mr. A. K. Maitra and M. Ganguli (Ch. XXII). The chapter on the 'Mithuna' (Ch. XXIII) was published by me in the Rupam in 1926. I have included it here in order to show how architectural canons were carried out in practice in India. Doors form a very interesting subject for study regarding Indian architecture, and I have applied the canons to actual specimens (ch. XXIV). This chapter further reveals that common architectural traditions were followed not only by the Hindus, but also by the Buddhists and the Jains of India. This has been further discussed in the later chapters (chaps. XXVI—XXVIII).

I have also shown, perhaps for the first time, that the Indian traditions regarding the making of bricks are very old. Some other materials have also been considered in this connection (Ch. XXV and the Appendix). This chapter further supports my theory about the age of the compilation of the various texts.

The next three chapters (XXVI—XXVIII) should be read together. In discussing the origin of Indian temples, a very naughty problem of Indian architecture, I have tried to follow

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the Indian treatises and to draw such conclusions as naturally follow from the study thereof. I have discussed the various prevailing theories regarding the origin of the North Indian temple style, as well as that of the so-called Dravidian style. I have shown that their origin cannot be traced from chariots, as held by several scholars. Nor can the theory of the origin of the South Indian temples from Buddhist Chaityas or pre-historic dolmens be supported by me. I have suggested that the North Indian temples had originated from the ancient 'Prāsāda' type of residential houses of North India, and the Dravidian buildings had their prototypes, both in Northern and Southern India, in the 'Vimāna' class of buildings which were different in form from the Prāsādas.

While discussing this matter I have suggested that there was a time when temples in the Deccan and South India were built in the North Indian fashion. That was the form of the Pre-Pallava temples in the south, modified to a certain extent by peculiar local traditions. This naturally led me to discuss the contribution of the Dravidas and other ancient Non-aryan races of India to Indian architecture (Ch. XXVII). I have also tried to adduce some reasons for believing that the Asuras of ancient India were Dravidians or Dānavas and that their culture spread over different parts of India till as late as the Maurya period. It was they and another ancient people—the Nagas—who helped the development of stone architecture in India (Ch. XXVIII), which existed in a very early time in India, but was adopted by the Hindus not earlier than the Second century B. C. These are daring propositions and I have tried to support them with evidences from various sources. The problem of the origin of the Nāgara style of architecture has also been, for the first time, tackled by me in the same chapter. This style was evolved by Garga with the help of the Naga king Sesa. This partially supports the view of the Late Dr. Jayaswal who attributed the origin of Nāgara architecture to the Bharasiva Nagas. But my reasons to support this theory are quite different from those

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given by him. I may mention here, which I have not done in the book, that the Nāgara style of architecture is related to the Nāgara style of painting mentioned in the Vishnudharmmotaram. We know from the Chitralakshanam of Nagnajit that painting was first introduced into the world by Nagnajit who was perhaps a king of the Asuras (or allied to them) with the help of Visvakarmā. It was this painting which was perhaps called the Nāgara painting, and was thus related to Nāgara architecture which was a joint product of the Visvakarmā school and the school of the Nagas.

The last chapter (XXIX) contains practically a summary of all my conclusions. I have therein suggested a new line on which we may divide the history of Indian architecture from the earliest times, as well as the history of the Vāstusāstra. It has also been suggested there that Vāstusāstra was inseparably connected with the political history of India ; its decline coming along with the decline of the Hindu royal power. The chart attached to this chapter will elucidate the points discussed therein.

What has been said above will, I hope, indicate what portions of this book are original in character. It is needless to say that what I have said are but mere suggestions based upon the study of various works dealing with Indian art traditions. My conclusions should not be taken as dogmatic ones. I have however, tried to meet all possible arguments which might be put forth against my findings. It may be hoped that the theories propounded here may show the way to future workers in the field.

A few words may be said here regarding the diacritical marks used in the book. For various reasons I had to make a very spare use of them, and I have not strictly followed the the system of the Royal Asiatic Society. They have been used generally where there may be difficulty in pronunciation. In case of 'sa' and 'na' and of names of books, the marks have been mostly used at random, for which I must crave the indul-

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gence of the reader. The 'ṚṚ' has been written as 'Ṛi', which, I believe, is a better guide to spelling and pronunciation. The marks could not be used at all in the Tables and the Index which have been printed in smaller type. This may cause some inconvenience to the reader. But it was unavoidable in the nature of things.

I have added several appendices at the end of various chapters. They were so placed, because the matter discussed therein arose out of the discussions in the preceding chapters. References have been given in the margin of the texts, as as well as in the footnotes. It will be noticed that many of the original verses or quotations referred to in the footnotes have all been put at one place at the end of the book. Only those original texts which I have considered essential for proper understanding of my contentions have been introduced. In many places the references have been omitted altogether, as there was no need for them in respect of matters well-known to the students of Indian architecture. I hope this will not cause any serious difficulty. The Tables attached will be of great help in making a comparative study of the various texts on *vastuvidya*. In many places, names of books have been written in an abbreviated form. I do not think readers will feel any difficulty in making out the proper name, though the abbreviations have not been always uniform in character. I have not, therefore, given a list of Abbreviations. The books have been mentioned so often that any initial of their names will be sufficient for understanding them.

In conclusion, I hope that the book will show a new line of investigation into the study of Indian architecture, in spite of its innumerable shortcomings.

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CHAPTER I

Origin of Architecture in India

The actual origin of architecture in ancient India is enveloped in an impenetrable shroud of mystery which cannot be removed by the present state of our knowledge. No available source, literary or monumental, relates to it, nor the mythological accounts of the Puranas offer a satisfactory solution. The earliest references as well as the earliest monuments disclose a stage which can hardly be called primitive, much less initial. In the accounts available from the Rigveda, the Brahmanas, the Epics, the Pali Jataka stories and the Arthasastra of Kautilya, we find an advancement in material, style, and decoration which must be assigned to a period long after the initial stage. The very few existing monuments e. g. the Jarāsandha-ki-Vaithak at Rajgir, the enclosure of the temple at Nagari, the Piprwa stupa, the columns of Asoka and other buildings of the Mauryan period, also testify to the developed character of Indian Architecture. The discoveries at Mohenjodaro in Sind purport to take us some three thousand years earlier but whether that civilisation had in any way influenced the later Indian Arts is still to be solved. Before more light is thrown from that direction, we must turn to the literary evidences to find out the source of Indian Architecture.

The earliest references show that the building of a dwelling had already come to be associated with fairly well-established rituals. Not only so, but even some of the forms of constructions were sought to be explained by symbolical or allegorical interpretations. Thus the Satapatha Brāhmana (III 6. 4. 27) and the Aitareya Brāhmana (VI. 1) explain the octagonal form of the Yupas or sacrificial stakes by saying that "it was the vajra (thunderbolt) and the vajra was eight-sided". The

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Sāmkhāyana Grihya Sutra (III.3.2.9) says "when the house has been built conformably (to its proper dimensions) he touches the post, the two to the east with the words 'Truth and Faith', those to the south with 'Sacrifice and Gift', those to west with 'Strength and Power', those to the north with 'The Brāhmanas and the Kshatriyas', and adds the following, "Fortune the pinnacle, Law the chief post, Day and Night the two door jambs, the Year the roof'. This tendency found in this very early ritualistic literature of India affords some support to Mr. Havell's theory who has attempted to explain the forms of Indian architecture by symbolical interpretations attached to them. Whether such interpretations can really explain their origin cannot be asserted ; but these explanations conclusively prove that at the time when these explanations were put forth, the real source of the forms had been forgotten, and building of houses being closely associated with well-established rituals, everything was sought to be explained with reference to religion. These rituals and the symbolism attached to the various forms of architecture thus undoubtedly point to the remotest antiquity of their origin.

The rituals connected with architecture are to be found in the Grihya Sutras, the Puranas and the Tantras, the Vastu Sastras and its later compilations till the fifteenth century A. D. From the earliest Vedic age to our own times, a Vedic hymn[1] used to be, and is, recited in connection with these rituals. The ceremony is now commonly called the Vāstuyāga. It consists in the worship of the Vāstupurusha or the Vāstunara not only in connection with building operations but also in connection with other ceremonials.

These rituals show that their original object centred round the cleaning and the purification of the ground selected for the building operations. Thus the Āsvalāyana (III 3-7), the Khādira (IV. 2-6-13), the Gobhila (IV. 7) and the Āpastamba (VII. 17) Grihya Sutras lay down elaborate rules

(1) Rig Veda VII. 54. 1.

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for selecting the ground and the Hiranyakesi Grihyasutra (I. 8. 27-29) cites the process for propitiating the ground. This ceremony of propitiation is called, in the Grihyasutras, the Vāstusamana ceremony. The word Vāstu was literally interpreted thus "Vasanti prāninaḥ yatra", i. e. "(a place) where living beings reside". Later on it came to include not only the site but also the dwelling built upon it, and later still bedsteads, the hammocks, thrones etc.

The Rig Veda hymn already referred to, invokes Vāstospati as the special deity supposed to preside over building sites Here the word Vāstospati has been differently explained. One commentator took it to mean 'the lord of the building site'[2] According to Devarāja Jajvā, Vāstu means the Antariksha and Vāstospati indicates all heavenly deities. According to this view Vastospati seems to have been taken as a general name for all the deities. While explaining the Rig Vedic verse, Sayana takes Vāstu to mean a house. According to him Vāstospati was the god who protected the house[3]. This meaning has also been accepted by late Monier Williams in his Sanskrit-English Dictionary.

Vāstospati was however one of the names of Indra the wielder of the thunderbolt and this word was taken as a synonym of Indra in all Sanskrit lexicons from that of Amara downwards. This earliest association of Indra as house protector with the rituals connected with building operations perhaps indicates nature of the original structure which necessitated a prayer for protection from the wielder of the thunderbolt. The other gods worshipped along with Indra were Soma, Yama, Varuna Vāyu.[4]

The deity now worshipped in building operation is not however, Indra, but a demi-god named Vāstu-purusha or Vāstunara, the mythical origin of which is found in all treatises

(2) 'Vāsto grihakshetrasya pati-radhishthātā.'
(3) 'Vāstospate grihasya pālayitri deva' (Rig Veda VII. 54. 1)
(4) Gobhila IV. 7. 41 ; Hiranyakesi 1. 8. 28.

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dealing with architecture. But the interesting fact is that, though the object of worship is Vāstu-nara, the hymn to Indra is still recited during the ceremony. This indicates the importance of the particular hymn for the builder of a house.

The details of this worship again seem to disclose a clue to the origin of building operations. Vāstu in the sense of the ground underneath a building is said to consist of either eightyone or sixtyfour padas. A square subdivided into smaller squares, nine or eight on each side, will make the total number of squares eighty-one or sixty-four,[5] with a central square, in each case, in the middle of which the diagonals meet. The point where the diagonals meet is the centre of the site. This central part of the site has been an object of special veneration from very earliest times. Gobhila (IV. 7. 27-41) enjoins the placing of the sacrificial fire in the middle of this site. Khādira (IV. 2-19) directs that the sacrifice of fat (of the animal) and milk-rice, should be performed here. Āsvalāyana (II. 8) refers to the existence of a central post at this point. The idea of a central post inside the dwelling indicates that the primitive house was a construction over and around this post. The shape of the construction seems to suggest a close resemblance to a shady tree which provided shelter to the primitive man from the sun and rain, at a time when housebuilding was unknown.

Thus we may infer that the earliest building in India was made after the model of a tree. This is curiously supported by an account in the Mārkandeya and the Vāyu (Ch 8) Puranas[6] The passage in the Markandeya Purana as translated by Mr. Pargiter runs thus :—"Living on mountains and by the seaside[7] they (men at the beginning of the creation) lived

(5) Each of these squares had a presiding deity who was to be worshipped according to later vastusastras. From this originated the system of placing figures of gods in the various directions of a temple.

(6) Vayupurana Ch. 8 (a) Markandeya P. (Ch. 49.)

(7) From the context, the word 'sebinyo' seems to mean 'living in' rather than 'offering worship to'.

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wholly without habitations (v. 15). Strife sprang up in consequence; their faces felt cold and heat and hunger. Then for the sake of combination and resistance they made towns at first; and they resorted to fortresses in inaccessible deserts and wastes, in mountains and caves; also they industriously constructed with their own fingers an artificial fort on trees, mountains and in water. (verses 34-36) As trees were their first kind of houses, so, with a remembrance of all that, those people built their houses. As some branches of a tree go in one direction and others go in another direction, and some rise upwards and some bend downwards, even so they fashioned the branches in their houses. Those branches became the rooms (Sālās) in the houses in consequence among the people (verses 52-54)." A similar account is found in the Samarāngana Sutradhāra (Ch. 6) which is also quoted below:—

"In the TretāYuga, men used to sport with the gods in groves, hills, rivers, lakes and forests, (verse 3). They secured all sorts of enjoyable things from the Kalpa-druma (or the wishing-tree) (v. 15). Having lost the Kalpa tree they began to dwell on other trees (v. 22). But gradually they were disgusted with trees and began to chop them off with stone and began to build houses. Remembering the form of the Kalpadruma, they constructed their houses consisting of one, two, three, four, seven and ten Sālās. (v. 35-36)".

This account which we find in the Samarangana Sutradhara corroborating the one quoted from the Markandeya Purana and the importance attached to the central post, as evident from the rituals, suggest that the primitive building, devised on the model of a tree was one with a central post as the trunk and the thatches in all directions as the out-stretched branches of a tree. This flimsy character of the building also necessitated invocations to Indra and other gods of the wind and rain.

This earliest connection of primitive dwellings with the tree appears all the more probable as we find that the vege-

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table kingdom was the first to be utilised for all necessary materials of housebuilding. The central post was beyond doubt the trunk of a tree. The rules relating to the rituals directed that the post should be placed into holes previously partly filled up with certain aquatic vegetables, presumably as a protection against white ants and damage by fire. Thus the Āsvalāyana Grihya Sutra (II. 8-14) directs that "into the pits in which the posts are to stand, he should have an Avakā i. e. (the water plant called) Sīpāla put down; then fire will not befall him". The classification of pillars, in later times, into the Vishnu-kānda (pillars with eight faces), Brahmakānda (pillars with four faces), Rudrakānda (round pillar) and the like, points to the trunk of the tree (called kānda) being synonymous with the shaft of the pillar.[8] Again the door jambs were called the Sākhās (the branches) from the use of branches of trees in their construction. The lintel of the door-way was similarly known as 'udumbara' or uḍumbara in Sanskrit and urummāra in Pali (Jātakas,) evidently from the use of the fig wood in making these pieces. The ropes were made out of the Kusa grass (Satapatha Brāhmana, III. 7. 1.-19). All these facts seem to indicate that wood formed the usual material for the construction of buildings in the initial stage. The earliest references in the Pali Jatakas, the Arthasastra and the Ramayana also show that buildings were generally made of wood.

That wooden architecture prevailed in India for a long time was concluded by scholars from the fact that even in later ages when other materials came to be used, the buildings were made after their wooden models. The oldest monumental relics still available in the numerous cave dwellings in various parts of India bear unmistakable traces of these models. The pillar, the arch, the door and the mouldings of the early caves all disclose their indebtedness to structural edifices built with

(8) The actual words used is 'Kānta'. Some scholars think this to be a later variation of the word 'kānda'.

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wooden materials. Thus writes Sir John Marshall, "These materials left their character deeply and permanently impressed on Indian Architecture. From the use of the bamboo came the curvilinear type of roof which was afterwards reproduced in cut timber and subsequently in stone, and from which were evolved the familiar chaitya arches used over doorways and windows. Log capitals were imitated in stone, and the more finished timbering of walls, roofs, and gateways in the same material, every detail down to the nail-heads being copied with sedulous care and accuracy by the masons of later days. As a protection against destructive insects, wooden posts were set in jars of earthen ware, and from these resulted the 'pot and foliage' base, so beautifully developed in the Gupta age."[9] It should not be inferred, however, as some scholars have done, that the stone buildings possessing traces of such wooden construction are to be looked upon as the earliest specimens of construction in stone. When for the first time wood gave place to harder materials cannot be ascertianed at the present state of our knowledge of Indian Archaeology. The only conclusion possible is that wood and the vegetable world supplied the materials first utilised by the Indians in their building operations ; and their use was so universal as to leave its trace long afterwards, even in building of as late a period as that of the Orangal Kirti stambha (thirteenth century A. D.)).[10] (See Chap. XXVIII).

Besides this investigation into the earliest possible nature of Indian architecture, the origin of some of the later forms of architectural constructions may be traced from references in the early literature of India. Attempts in this direction have been made by several scholars of whom Mr. Havell's name is most noteworthy. His symbolical interpretations of the various forms of Indian architecture have already been

(9) Cambridge History of India Vol 1, p. 617.
(10) Even nowadays in Bihar brickbuildings are supported on wooden posts.

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referred to. Even in the above quotation from Sir John Marshall's writing, we find an attempt to explain the Gupta bases by referring to an alleged early custom. It may be noted that most of the Indian pillars are octagonal and even early literature such as the Pali Jatakas, refers to such octaganal pillars. The explanation for this inclination on the part of the Indians to make the pillars eight faced may be sought in the injunctions of the Brāhmanas to make the Yupas or stakes eight sided (vide Ref. to Satapatha and Aitareya Brāhmanas above.[11]

The plans of Indian buildings might have arisen from a similar direction in the Grihya Sutra. Thus Gobhila (IV. 7.12-13) says "(The site of the house) should have the form of a brick or it should have the form of a round island" i. e. it should be either square or rectangular (Āsvalāyana II. 8. 9-10) or round. It is perhaps from these injunctions with regard to the site, that the buildings also took their forms. Most of the Indian temples, at least the early ones, are square or rectangular in ground plan. Round temples, however, were not unknown in ancient India which is apparent from their representations on the Bharhut rails and from the remains of such ones excavated by Prof. Bhandarkar at Nagari.[12]

The Satapatha Brahmana again, while laying down the rules for the construction of a Smasāna or burial mound, relates some interesting legends regarding their shape and some other features. As these Smasānas were the prototypes of the Stupas, afterwards so favourite a construction with the Buddhists, these legends well deserve attention. Thus the Satapatha Brahmana says[13] "four cornered (is the sepulchral mound). Now the gods and the Asuras, both of them sprung from Prajāpati, were contending in the four regions. The gods drove out the Asuras, their rivals and enemies, the

(11) For origin of other matters relating to pillar see later vedic injunctions (Ch. II)
(12) "Excavations at Nagari"—Memoirs of Arch. Survey No. 4.
(13) Satapatha Brahmana XIII. 8. 1-4.

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regions, and being regionless, they were overcome. Wherefore the people who are godly make their burial places four cornered whilst those who are of the Asura nature, the Easterners and others make them round." In the second Brahmana the same legend of the fight between the Devas and Asuras is related, after which it is said, "Those who are godly people make their sepulchres so as not to be separate from the earth, whilst those people who are of Asura nature, the Easterners and others, make their sepulchral mounds so as to be separated from the earth, either on a basin or on some such thing." It seems most probable that the legend related here about the fight between the Devas and the Asuras is based on some long forgotten strife between the Indian Aryans and the Assyrians of the soil.[14] Recently discovered civilisation on the site of Mohenjo-daro has been spoken of by some scholars as being related to that of the Sumerians, the forerunners of the Babylonians and the Assyrians. Thus the problem of the probable connection between the Assyrian and the Indian civilisation must wait to be solved by future excavations on that site. Before that can be done, from the legends of the Satapatha Brahmana we may infer that the round shape of the Buddhist stupas and the bases under them were imitations from those constructed by some non-Aryans in India, whereas the Hindus always built square stupas without any such base.[15] The earliest stupas indeed had no base and the square stupas of the Hindus were found by Prof. Bhandarkar during his excavations at Nagari. Another reference in the same Brahmana seems to be very interesting. Thus it is said, "They now fix pegs round it. One in front, a Sami one on the left, one behind, of Varana, a Vritra peg on the right". Are we to take this custom as the source of the later custom of erecting four toranas or gateways on four sides of the Buddhist stupas?

(14) Vide "Asoka" by Prof. Bhandarkar, p . 217-19:
(15) The matter has been discussed again in Ch. XXVII

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Thus the ancient rites and some of the customs suggest to us a probable origin of Indian architecture. The invocation to Indra and the other gods of rain and wind, the reference to the central post in the room, the placing of aquatic vegetables in the pits for such posts, references in the Markandeya Purana and the Samarangana Sutradhara and the architectural terms of later ages and even the earliest available monuments all go to suggest the character of the primitive building scheme of India. Other rites or legends have also been referred to as pointing to the origin of several forms of Indian architecture. The development was one "from the log cabin to the white house", from the humble cottage of leaves to ostentatious temples and palaces.

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CHAPTER II

Architecture in the Rigvedic Period

The importance of the Rigveda as the earliest available record of Indian civilisation is universally admitted. "Though the secular poems" writes Macdonell, "are very few in number, the incidental references are sufficiently numerous to afford materials for a good picture of social condition of India". The study of the Rigveda is, therefore, essential for a proper understanding of ancient Indian architecture.

The very first point to be noted is that architecture had already come to be closely associated with religion; and the building of a structure was recognised as a religious act. The Vāstu or the site of a building is conceived as being presided over by a deity called "Vāstospati" invocation to whom must have been necessary whenever a new house was built. Two chapters in the seventh Mandala deal entirely with invocations to that god (VII.54 and 55), where he is prayed for an excellent abode (svābesa) free from disease and full of wealth and cattle. In another verse he is propitiated so that a pillar may be strong and firm in its place (VIII.17.14). In a hymn in the 55th chapter of the VII Book, Vāstospati seems to have been identified with Indra (verse 3). The identification of these two gods was accepted in later times in the lexicons. Vāstospati is again identified in the Rigveda with Tvastrin, the carpenter of the gods (V.41.8). Later Silpa Literature describes 'Tvastā' as the master architect. Thus according to a tradition mentioned in the Manasara, he was the son of Viswakarmā (cf. Silparatnam). The disciples of Tvastrin were the Ribhus who are also invoked in many of the hymns. Visvakarmā, famous in later literature as the architect of the gods, is not referred to in the Rigveda as having any special connection with house-building. He is invoked as the creator of

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universe as a whole (X. 6. an 13-14 ; (681-82)· and it is quite natural to suppose that the later tradition about Visvakarmā had its origin in the Rigvedic verses. In addition to these gods, the epithet, Vasu (the giver of a dwelling) or "grihapati" (Lord of the house) was attached to many other gods such as Agni, Soma, the Maruts and so on. The invocation to these gods was undoubtedly necessary at the time of a special ceremony performed before entering a new house. This ceremony is hinted at in a hymn where it is said that "the wise, (first) honouring Agni, as they do a dwelling, worship him etc. "(I.67.5). This simile shows that before a house was put to use, a worship was offered to it. These ceremonials in connection with building operations were elaborated in a later age and they are performed even at the present day, when the same old Rigvedic verses are repeated. These ceremonials are described in detail in all works on Architecture, the Puranas and other cognate works. In the Pali Jataka stories, the ceremonial is referred to as the "Pāsādamangalam". Worship of doors and of the sacrificial post (Rig. III. 8) further proves the close connection of architecture with religion.

From occasional references to prescribed measurements followed in building a structure, it may be inferred that building operation had come to be recognised as a system and not a haphazard action. A hymn has been explained by Sayana to refer to the system of making a piece of land slope towards the east (II .15.3). The Gobhila Grihya Sutra while laying down rules for the selection of a site directs thus "Let him select the site for building his house on even ground on which the waters flow off to the east or north" (V.7.3). The Rigvedic hymn, therefore, proves the existence of rules for selecting the site for a building, even in the Rigvedic period.

The ceremonials connected with building operations, the measurements followed, and the rules for the selection of the land, thus, form the nucleus from which the Indian science of chitecture, later on incorporated as the Vāstuvidyā, had deve-

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loped. Another reference in this connection is very interesting. In an invocation to Mitra and Varuna (VII. 33. 13) it has been said that Mitra and Varuna poured a common effusion in a waterjar from the midst of which rose 'Māna' and Vasishtha. The birth of Māna from a jar shows, and Sayana actually says, that Māna was another name of Agastya who is famous as "Kumbhajāta" i. e. born from a kumbha (jar). This story is related in the Matsyapurana ch. 61. Agastya was acknowledged by later writers on Architecture as a preceptor of the Vāstuvidyā, and from the name Māna (which means measurements) given to him in the Rigveda, it may be inferred that Agastya might have been connected with Architecture even during the Rigvedic age.[16] Vasishtha was also known as a preceptor of Vāstuvidyā. He might have been another Vasishtha.

Nearly thirty different words were used in the Rigveda to refer to dwelling places, but very few of them give any idea about the characteristics of a building. The word "chhardi" occurs frequently and must have denoted the roof of a house. In one hymn (IV. 2. 5) there is a reference to a "Sabhā" which may or may not indicate any edifice of that name but may simply mean an assembly. The expressions "Durona", "Duryasu" have been derived from the word "Dur" meaning a door and therefore must refer to structures having doors.

There are no references to the materials used in constructing the houses. Tvastā and Ribhu who, as has already been said, were the master architects, are said to have constructed many small articles for Indra. Thus Tvastā sharpened (Tataksha) the far-whirling Vajra or thunderbolt of Indra (I. 32.2.) and made a spoon for him. In all the references the verb used is 'Tataksha' which means chipping of wood. But other references show that the word meant not only chipping of wood but

(16) The famous treatise on Architecture called the Manasara may thus be a summarised version of Agastya's works on Architecture. Another work the sakalādhikāra is attributed to Agastya. (Ram Raj). The matter is further discussed in Chapter XVIII.

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also working in other materials. Thus Tvastā framed the well-made, golden and many-bladed thunderbolt for Indra (I. 85.). In another hymn the Vajra is called 'Āyasa' or metallic (X. 48) Tvastā was thus not only a carpenter but might have been a worker in gold and other metals. The verb 'Tataksha' therefore need not be taken to mean chipping of wood only. From references to Tvashtā, therefore, it is evident that the master architect was a carpenter and must have used wood as the general material for a building, but other materials might as well have been used. The word 'Takshaka' is explained in later works on Architecture to mean one of the masons engaged in building operations, his especial duty being to give a thick or fine shape to the stone, wood or the bricks used in a building.[17] From the references in the Rigveda, therefore, we may conclude that wood was the chief material for constructing a building.

A more substantial and ostentatious structure must have been hinted at by the word "Harmya" which occurs at least twelve times in the Rigveda. Thus Vṛitra was detected, or placed, in a dark 'Harmya' (Tamasi Harmya) (V. 32. 5). The shutting up of men's eyes rendering them stationary or unconscious is compared to the fixity or insensibility of the Harmyas (VII. 55. 6). The expression "Innocent (Subhra) as children residing in the (Paternal) mansion" (VII. 56. 16), perhaps indicates by the epithet 'Subhra' the whiteness or shining character of the building as much as the innocence of the children. The coming down of Surya's rays from above the sky has been implied by the expression "from above the Harmya" (Harmyebhyaḥ) (VII. 76. 2) which perhaps indicates either the considerable height of the buildings of the Harmya class or its position on the top of a house. The meaning of the word "Harmya" is often found in later treatises to be 'a room on the upper part of a house".[18] Indra is called a destro-

(17) Mayamatam Ch. V. 20
(18) Buddhaghosa, commentary on Cullavagga ; Samarangana 18. 9½.

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yer of the Harmyas, perhaps of the Asuras (IX. 71. 4.; 78. 3). Indra's strength in all the other hymns is praised with reference to his destruction of the strong cities (Pur) of the Asuras. The substitution of the word 'Harmya' for 'Pur' in this verse and the reference to Vṛitra's dark Harmya (see above), therefore, undoubtedly show the substantial character of the Harmya buildings.

The epithet "Dhruva" attached to a house (III. 54. 20. II. 41.5 etc), to indicate its firmness, is interesting on account of the fact that "Dhruva" was the name of a special class of building described in the later Silpasastras.[19]

The strength and stability of the Rigvedic houses cannot be determined without a consideration of the Puras or cities referred to in many passages of the Rigveda. Indra is said to have destroyed the ninetynine cities of the Asura Sambara. Sometimes there is no indication as to whom the city belonged. In other places the epithets Dṛiḍha (V. 19. 2), Dṛimhita etc. are used without the mention of the word 'Pura'. In some cases, these epithets may refer to the forts, the existence of which may also be inferred from expressions such as 'Durgāni', and artificial barriers (Kṛtrimas). The epithets and verb used, the latter always implying breaking by force, and the use of adverbs denoting application of force, prove, that the Puras were so strong as to require the force of a god to demolish them. The epithet 'Ayasi' often applied to the Puras signifies, if not the real existence of iron forts, the strong nature of the fortifications. One single reference to the hundred cities made of stone (Asmamayasi) occurs in Rigveda IV. 30. 20. Muir in his Original Sanskrit Texts (Vol. V. p. 454) remarks, "Even if we should suppose this was a mythological reference to the aerial cities of Asuras (Cf. X. 67. 3), it might be received as an evidence that they had their prototype stone-built cities on the earth, a circumstance in itself by no means improbable in

(19) Visvakarmaprakasa Ch. 2. 103
Samarangana Ch. 23. 6.

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tracts of country bordering on the hills where stone is abundant". This passage shows that the walls, at least, of the fortifications were made of harder materials than mere bamboo or planks. Cities with hundred enclosures or fortifications (satabhuji) are referred to in I. 166. 8; VII. 15. 14, which, according to Muir, "no doubt suggest the idea of forts consisting apparently of a series of concentric walls, as actually existing in the country at that time." Another epithet "Subhra" applied to the Pura, perhaps refers to the white washed walls of the city or to some shining materials of which the walls or the houses were built.

Whether stone-built (or strong) Puras refer also to the buildings therein being constructed of that material, cannot be definitely ascertained. Macdonell says "there is nothing to show that they (puras) were inhabited, much less that Pur even meant a town or city, as it did in later times (Sanskrit Literature p. 158. Macdonell). According to him the Puras were fortified enclosures erected at the time of some danger, without any houses in them. But several Hymns[20] may be taken to refer to the existence of private citizens in a Pur (city). The strong fortifications and the presence of civil population therein, if considered together, may warrant us to conclude that the Pura was neither an ordinary village nor a mere fortified enclosure without any private habitation. The question arises is whether from the references to stone-built Puras we may also conclude the existence of stone-built houses in the Rigvedic period. The remarks of Prof. Wilson are just to the point. He says, "Whether the notion of masonry be confined to the walls or extended to the dwellings, it indicates familiarity with something more substantial than mere hovels" (Rigveda Vol. III Notes on IV. 30. 20).[21]

Whatever materials might have been used in building the

(20) Rigveda I. 24 189. VI. 2. 7 ; IX. 107. 10.

(21) If the ancient Mohenjodaro people are identified with the Asuras of the vedas, it indicates existence of brick-built and perhaps also stone built buildings in the Rigvedic period.

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Rigvedic houses, many are the references which show that they were made on an established system, in bigger scales and affording more comforts than mere hovels. Thus "the invoker of the God Agni pervades the measured station of the altars (Parimita sadma)". The eastern quarter is said to have been measured (Vimimāya mānaiḥ) as is a chamber (II.15.3.). The sacrificial stake is said to have been measured with a careful measurement (Sumiti Miyamāno). These references to the carefully measured structures prove the sense of symmetry and proportion of the Rigvedic Indians. The extensive scale of houses is signified by epithets such as "Pṛithu", "Sāmpratha" (thick), Mahi, Vṛihat, Uru (great), Dirgha, Gabhira (deep i. e., with reference to the width of a house) and so on. The house of Varuna is described as "having a vast area and having thousand doors in it (Sahasra dvāram)" (VII.88.5.). In another place Mitra and Varuna are said to have remained in a firm (dhruva) elegant house, built with a thousand columns (sahasra sthuna). The house of Bhoja is compared to a tank (Puskariniva Vesma) and is delightful (citram) like the dwelling of the gods (X.107.10.), which may refer to the decorations over the house (Otherwise the comparison with a tank does not become clear). The above references therefore prove the elaborate and artistic nature of the buildings of the Rigvedic period.

There are several expressions in the Rigveda which have been explained by Sayana as referring to many-storeyed houses. Parjanya is invoked for granting a shelter (saranam) and a house (Sarma) which is described as "having three Dhātus (Tridhātu)". The word "sarma", according to Sayana, means a house or happiness, and "Tridhātu" either three-storeyed or "the three ingredients of human body". In another place the word "Tridhātu" is explained as "residing in three places". The uncertainty as to the meaning of this word, therefore, prevents us from coming to a definite conclusion. The same difficulty is also met with in the explanation of the word

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"Trivarutha". The Maruts are invoked to grant a dwelling which should be "trivarutha" (VIII. 18.21.). Sayana takes the word to mean either a shelter against the three sources of distress viz. the sun, rain, and cold, or "a three-storeyed dwelling". In IX.97.47, the word has been used as an epithet of Sarma. In VIII.18.20, we have the word without the prefix "three". There too Sayana takes "Varutha" as meaning a shelter against sun, cold etc; and thereby referring to a house. Unless the meaning of these words is precisely explained, nothing can be said definitely about the existence or non-existence of many-storeyed houses in the Rigvedic period.[22]

Indians were skilful builders of dams or embankments from a very early time ; and the references to 'Smasā' meaning a (dam) point to its existence in the Rigvedic period.

The doors formed an important feature of all the houses, as is evident from the special worship offered to them. The large number of doors attached to a house has already been referred to, thousand doors denoting the largeness of the number. On the door, perhaps forming the jambs, stood a Yupa (post). The strength of the door was a matter of special observation and often a good object of comparison indicating stability and strength (I. 51. 14). The door is called dvār, dura, bāra, khani and so on. In one hymn (I, 188. 5) doors are described as "Virāt, samrād, prabhvi, vahbi and bhuyasi" meaning "variously and perfectly radiant, manifold, excellent, many and numerous".

References to pillars are found all through the Rigveda. Sthuna, Stambha, Skambha or Viskambha are the several names of pillars referring to both free-standing pillars and supports. Several other words such as Upamit, Meta, Upamat, Dharuna etc. are used to refer only to the supports. Many gods are compared to pillars in respect of the support they afford to the

(22) The word-Dhātu-in connection with buildings is used in the Silpa-Sastras as referring to the various (seven) parts or the materials of a building (Silparatnam, Ch. 16.121-23.)

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worshippers or to the firmament (I. 59. 1; III. 31. 12; IV. 5.1.) Reference has already been made to the thousand-pillared house of Varuna. The "Sahasra-sthuna" houses are mentioned in many places in the Jataka stories and in the great epics and seem to have been very much liked by the Indians. The use of the two words 'Yupa' and 'Sthuna' indicates that they are synonymous and that the shape of the pillars at that time resembled that of the sacrificial stakes. The octagonal pillars of later periods seem also to point to the same fact.

The post or the Yupa which had to be erected at the time of a sacrifice was worshipped with mantras (III. 8) before it was set up on the ground; and from these mantras we may form an idea of its shape. It was undoubtedly constructed from a tree as is evident from the term "Vanaspati" which was used while addressing it. The Yupas were set up to the east of the altar where fire burned. They are said to have been measured with great care, which shows that the measurement was made in strict conformity to the injunctions laid down in the Brahmanas and the Kalpa-Sutras. When their number exceeded one, they were ranged in rows. On the tops were hung several garlands. The 'Svarus' or chips are referred to in the Rigveda and they are explained in the Brahmanas as chips of wood cut off from the stake and inserted under a rope girding the lower part of the Yupa. On the upper part was set a 'Chaṣāla' or a ring forming a head-piece. The Brahmanas supplement this description of a yupa by saying that it should have eight corners, from which it may be inferred that in the Rigvedic period too the yupas were octagonal in form. The octagonal pillars so common in Indian architecture seem to have originated from these yupas ; and they seem to have been specially liked by the Indians because of their association with the religious structure Yupas. The 'Chaṣāla' was the prototype of the capitals of pillars of later days. The description of the Rigvedic Yupa should be studied along with the one found in the Brahmanas and the Epics, an actual reproduction

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of which in stone may be seen in the Isapur Yupa-Stambhas.[23]

The sacrificial altar was the other structure connected with religion. The description of an altar occurs in X. 114. 3, which shows that it was quadrangular in shape. The word 'Suparna' in this hymn reminds one of the directions laid down in the Sulva-Sutras for making an altar in the shape of the bird, Garuḍa, and also of similar descriptions of altars occurring in the Ramayana and the Mahabharat.

The prevalence of the custom of burying the dead in the Rigvedic period is a matter of controversy among the scholars. Even if the deadbody itself was not placed inside the tomb, there are references in the Rigveda to show that mounds were raised over the bones or ashes of the dead. The expression 'Mṛnmayam Gṛham' (VII. 89) refers to these tombs. There is one whole chapter (X 18) in the Rigveda from which some idea of these mounds may be formed. The first construction described in this connection was a 'Paridhi', which indicates a circular structure encircling another. Sayana thinks that this Paridhi was made of stone. Whether stone was really used or not, it may safely be concluded that the structure was similar to and thus a prototype of the Buddhist "Rails" found round the Stupas.[24] The 'parvatena' by which dea[illegible]is said to have been hidden inside should not refer to the [illegible]si"-dhi, as Sayana takes it, but to the mound which was erec[illegible]d over the place, as is obvious from the form hinted by the word itself. Verse 13 shows that a 'loga' was then placed either as a lid over the urn containing the bone (as Sayana takes the word to mean) or over the mound itself. If the second meaning be correct we may infer that a piece of some hard material was placed on the top of the mound to protect it from the rains, from which arose the custom of facing the stupas with bricks or stone. Above the 'Loga' or by the side of the mound

(23) Archaeological Survey Reports 1906-7. pp. 119 ff.
(24) Wilson's notes on the verses.

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must have been erected a 'Sthuna' or a pillar. It was a universal custom with the Buddhists to erect such a pillar by the side of the Stupas. Dr. Bloch, however, while excavating the site of Nandangarh, unearthed several wooden posts standing erect over two horizontal layers of clay alternating with straw and leaves. These layers contained a deposit of human bones and charcoal accompanied with a small golden leaf impressed with a female figure.[25] He identifies these remains with the Rigvedic burial mound and accordingly interprets the Rigvedic verses addressed to Prithivi as referring to the goddess Earth whose figure was imprinted on the golden leaf. The sthunas, referred to above may be the pillars similar to those discovered by Bloch. His interpretation, however has not been universally accepted.[26] Leaving aside the doubtful points, we may infer the existence, in the Rigvedic period of burial mounds having a Paridhi and a pillar. The Grihya-Sutras enjoin that the burial hymns of the Rigveda are to recited while placing the bones contained in an urn, under ground; the ceremony being called 'Asthisamgraha' (collection of the bones).

Havell has noticed[27] a similarity between the Rigvedic burial mounds, and the Sudama cave; and Dubreiul has drawn our attention to the resemblance between those mounds and several South Indian structures with vaulted roofs. Whatever might have been the precise form of these mounds, there is no doubt that these Rigvedic mounds must have been the prototypes of the Stupas of the Buddhists. The word 'Stupa' occurs at least twice in the Rigveda; but the meaning is, according to Sayana, a heap of rays. The word might have meant at that period, as it still does, a heap (of anything) though vedic scholars have taken it to mean 'summit'. But in one of the

(25) A. S. Reports 1906—07 p119ff.

(26) Cambridge History of India Vol I, P616.

(27) Havell—Handbook of Indian Art.
Dubreuil—Vedic Antiquities.

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passages of the Rigveda, the word perhaps indirectly indicates a structure. The verse[28] (I. 24. 7) may be translated as follows, "The king Varuna raises (dadhate) a stupa above the forest (vanasyordham) in a place having no foundation (abudhne)." Although this translation may seem to contradict Sāyana's interpretation, it does not so really come in conflict with it; for, the stupa here refers to the heap of rays. From the above translation it is clear that the poet here suggests a comparison between the heap raised by Varuna and a Stupa which was generally built on a strong base ; but the power of the god Varuna was such that it enabled him to construct one without any base. This passage may, therefore, indicate the existence of mounds having a base called Stupas, even in the Rigvedic period.

The above review of the condition of architecture as we find it in the Rigveda shows that architecture had already passed the primitive stage. The strong cities or forts described in the Veda, according to many scholars, refer to those of the Asuras only, who are identified by many with the Assyrians living in India[29]. The indebtedness of India, as regards architecture, to the Assyrians is apparent from several ancient structures. It is therefore probable that the Asuras (Assyrians) of India were more advanced as regards their architecture than the contemporary Rigvedic Aryans. The newly discovered civilisation at Mohenjodaro and Harappa may lend strong support to the opinion of the aforesaid scholars, but nothing can definitely be said before the excavations of those sites are clearly interpreted.

In this connection we may recall the references to 'Māna' (Agastya) and Tvashṭā in the Rigveda. In later periods they were regarded as master architects of the Drāviḍa School. Mr. J.C. Ghosh[30] also tried to prove that Nagnajit, an architect

(28) Rigveda 1.24.7.
(29) D. R. Bhandarkar—Asoka.
(30) J. C. Ghosh—Indian Culture Vol. VI
See also Chap. X.

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and the Asura King of Gandhara lived in the Rigvedic period. A Nagnajit was also later on regarded as a master architect of the Drāviḍa School. We shall further discuss this matter (Ch. X) to show that there might have been an Asura or Drāviḍa School of architecture in the Rigvedic period. This is perhaps to be identified with the architecture of the people whose remains have been found at Mohenjodaro and Harappa.

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CHAPTER III

Architecture in the later Vedas and the Brahmanas.

From the Rigvedic period, whe have seen, the Indians began to develop several architectural traditions, which were most intimately associated with their religion. We have shown how some idea may be formed of the shape of the Vedi (altar) and the Yupa (sacrificial stake) from the hymns re cited during their construction. Civil architecture must have been in process of development when the Aryans came in closer contact with the original settlers, and acquired more intimate knowledge of the 'Puras' of the Asuras.

When we come to the later Vedic texts, the Yajurveda, the Atharva Veda and the Brahmanas, we find many of the Rigvedic verses still in use. Hardly any new kind of religious structure had been evolved, and the gradual change in the building methods cannot be inferred from these later hymns. The White Yajurveda (Chapter 35), however, gives a description of the construction of the Smasān (funeral mound) existence of which was also known in the Rigvedic period (vide ante) which gives us an idea of the prototype of the Indian Stupas-Hindu or Buddhistic. (Vide "Origin of Indian Architecture").

The Black Yajurveda contains, numerous hymns relating to the Yupa (I. 3; VI. 3 etc.). One of these hymns supports the theory that the earliest structures in India had a symbolical significance. Of the Yupa, it is said (VI.3.4.) "What is dug in belongs to the Pitris; what is above the part dug in, upto the girdle, belongs to men, the girdle belongs to plants. What is above the girdle, upto the top, to all gods; the top to Indra, the rest to the Sādhyas". These hymns may have given rise

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to the depictions of the figures or symbols of the Pitṛi, human beings, plants, Indra and the Sādhyas on the different parts of the Yupa. If Yupa be taken as the prototype of Indian pillars, we must try to show how far the decorations carved on the pillar conformed to this description in the Veda. The shafts of many extant pillars from the base upto the girdle contain human figures, and the girdles are generally decorated with leaves. The top of the Yupa might have contained the figure of the god worshipped (In the Vedic period, perhaps a figure of Indra, the greatest of the gods). Later on this part of the Stambhas or Dhwaja set up in front of a temple contained a figure of the Vāhana or the vehicle of the god—as for example, Garuḍa the Vāhana of Visnu, the Bull of Siva and so on. The parts above the top, the entablature, belonged to the Sādhyas and we find the Indian entablatures generally decorated with flying figures—the Sādhyas of the Vedic texts.

The Atharvaveda contains the hymns recited during the building of a house (III.12; IX. 3) and many architectural terms have been incidentally used in it. While describing the building operation, the Atharvaveda mentions the raising of the 'Vamsa' (beam) above the 'Sthuna' (post), and of the 'Upamit', the 'Pratimit' and the 'Parimits' of a 'Sālā'. These words refer to the various supports of the roof which must have been similar to those of the modern Bengali thatches (Illustrated in Havell's "Ancient and Medieval Architecture") —the interstices of bamboos, lengthwise and breadth-wise, and short support of the roof. These terms, therefore, indicate to some extent the nature of the ordinary dwelling houses of the Atharvavedic period. This Veda further refers to houses, of varying shapes and sides, some being two-sided, others four-sided, six-sided, eight-sided and ten-sided. The Rigveda refers to 'a lord of the house,' (Vāstospati); whereas the Atharvaveda refers to a "Mistress of building" (IX 20). Pillars are called Sthuna as well as Skambha in the Atharvaveda.

The Brahmanas contain elaborate descriptions of the forms

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of the various religious structures—the Yupa, the Vedi and the Śmaśāna. The gradual development of Indian art may also be known from some of the Brahmanas. The word "Silpa" in the sense of a work of art is found in the Brahmanas. Thus in the Aitareya Brahmana (VI. 5. 27), we find the following passage, "They recite the Silpas. These are the works of art of the gods; in imitation of these works of art, here is a work of art accomplished—an elephant, a goblet, a garment, a gold object, a mule chariot are works of art". Here the word Silpa is illustrated by objects such as an elephant, a goblet etc. Thus hand-made things or a sort of sculpture was recognised as a branch of Silpa. The use of these articles in a sacrifice, which were symbols of something, indicates the earliest use of symbols by the Indians. All scholars agree that a sort of image worship had begun in India in the later Vedic and the Brahmana period.[31] In the above mentioned passage some of the cult objects are clearly referred to. Again in the Kaushitaki Brahmana (XXIX. 5), it has been said "The Silpa is three-fold, dancing, music and singing." Thus in the Brahmana period Silpa meant the fine arts including sculpture, singing, dancing and music.

In the Brahmanas, as has been said, we meet with a sort of image worship. The cult objects have already been referred to. In various rituals the wheel is used as a symbol of the Sungod, representing both its shape and motion. A piece of gold was often used as a symbol of the Sun. It is further believed that a leaf of gold with the figure of the earth-goddess carved on it was often placed along with the ashes or bones of the dead in the mounds erected over them. In the Srauta and the Grihya Sutras, images are clearly mentioned.

The Aitareya and the Satapatha Brahmanas contain description of the methods of construction and explanations of the forms of the Yupa. The Satapatha account gives fuller details;

(31) See Dr. J. N. Banerjee—Indian Iconography.

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from which one may form a clear idea of the forms of later Indian pillars, (Vide "Origin of Indian architecture").

While describing an altar the Satapatha Brahmana (I. 2. 5.) says, "Measuring a Vāma across on the west; three cubits long should be the easterly line. It should be broader on the west, contracted in the middle, and broad again on the east, for thus shaped they praise a woman". In VII. 4. 4. we further find a description of the Vedi, and in VIII. 1, a description of the Citi which was to be made of bricks. (Fire Altar).

The use of bricks in ancient India could not have been limited to sun-dried bricks only, as Sir John Marshall holds ; for, the bricks used in the 'Citi' got burnt in the sacrificial fire and must have taught the Indians the knowledge of the process of burning bricks. The descriptions of the fire-altar as found in the Brahmanas may be supplemented by those in the Sulva Sutras. The injunctions laid down in these texts were actually followed in practice, as is evident from the descriptions of the fire-altar, contained in the Epics.

The construction of the Śmaśāna (Burial mound over the ashes or the bones of a dead man) is described in detail in the Satapatha Brahmana (XIII. 8. 1. 4.) which, supplemented by the Rigvedic and Yajurvedic verses already referred to, gives us a clear idea of the earliest form of the Indian Stupa. The Aryan Stupas were four-sided; the non-Aryan ones were round. Square Hindu Stupas have been found in India. The Hindu Stupa rested on the earth, whereas the Asura Stupa was erected on a base. The mound was then enclosed by a stone which perhaps indicates the stone casing or the rails round the stupas. Pegs were fixed on the four sides, which might have given rise to the custom of erecting a pillar on each of the four cardinal points around the Stupa. (Vide "Origin of Indian Architecture.) The description occurring in the Satapatha Brahmana further indicates the influence of Asura architecture on Aryan or later Indian architecture.

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The Aitareya Brahmana refers to Parvata and Nārada as teachers of Nagnajit of Gāndhāra and these two sages are also mentioned in the Rigveda (IV. 15): Nārada & Nagnajit later on came to be regarded as authorities on Vāstuvidyā (see ch. X) of the Drāviḍa School. While describing the fire altar, the Satapatha Brahmana rejects the view of Nagnajit on the ground that he belonged to the kingly class. This matter will be discussed in a later chapter.

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CHAPTER IV

Vāstu-Vidyā in the Sutra Literature.

In the Rigveda and the Brahmanas no direct reference to the existence of the VāstuVidyā can be traced ; though the existence of many of the rules of Vāstu-Sāstra may, as has been shown, be gathered indirectly from them. It is in the Gṛihya Sutras that we first meet with several principles of Indian architecture which gradually developed into the elaborate Science of Architecture—The Vāstu Vidyā.

The Sānkhāyana Grihya Sutra describes in three chapters (III, 2 ff.) the ceremonials performed by a man when he builds a new house. First he draws, with an Udumbara (Fig tree) branch, three lines—one round the ground where the building is to be erected, then performs some sacrifices in its centre, and then erects the posts in pits dug for the purpose. When the house has been built, conformably to its proper dimensions, further worship is offered to the posts and other parts of the building. "He touches the posts, the two to the east with (the words) "Truth and Faith," those to the south, with "Sacrifice and Gift", those to the west, with "Strength and Power" and those to the north, with "The Brāhmanas and the Kshatriyas." The other parts are to be similarly touched—thus, the pinnacle with "Fortune", the chief post, with "Law", the two door jambs, with "Day and Night", the roof with "Year" and the foundation, with "A Bull and Ocean". Then he performs a sacrifice to Vāstos-Pati, reciting the several Rigvedic hymns and enters the new house with his family, saying, "Indra's house is blessed, that I enter with my wife etc."

These ceremonials furnish important data for the proper understanding of Indian architectural principles. It is to be

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noted that the centre of the ground was held in high reverence. It was there that the first necessary rites were to be performed and the chief post fixed. The existence of the central post and the importance ascribed to it in the Sutras indicate that the earliest house of the Aryans, of a time when these ceremonials came into vogue, was one with a pillar in the centre, on which the stability of the house depended. The flimsy nature of the building is perhaps indicated by the invocations to Vāstospati and Indra—the two being identified. The house was Indra's house and was meant for protection against his arms—the thunder and rain (see "Origin of Indian Architecture").

Another important conclusion we may draw from the worship offered to the various parts of the building—the posts, the pinnacle, the door jambs, the roof and the foundation. These were to be touched and each had a symbolical meaning attached to it. This shows that from very early times architectural constructions had been invested with symbolical and mystic significance, each representing a particular aspect or condition of the human society. These traditions must have been handed down from generation to generation, and even when the original significance had been forgotten, the structures deviated very little from their original forms.

The Āsvalāyana Grihya Sutra contains three chapters on Vāstu-Vidyā (II. 7-9) in which are described, besides the ceremonials already mentioned, several new customs of the period. The selection and examination of the ground or site, the methods of which have been elaborated in later Vāstu-Vidyā, forms one of the most important subjects discussed therein. This examination is firstly based on the outward appearance of the site—the growth of trees and shrubs, elevations and the depressions. The quality of the soil is next examined in two different ways. A pit is dug and is filled again with the earth taken out of it. If the cavity, is not entirely filled up by it, the soil is to be rejected ; if the

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cavity is exactly filled up by it the soil is of medium quality ; and lastly if there is excess of earth after refilling it the soil is considered to be excellent. The next process is thus described—"After sunset he should fill the site with water and leave it so through the night. If (in the morning) there is water in it, the ground is excellent ; if it is moist, it is of middle quality ; and if it is dry, it is to be rejected". The colour and taste of the soil were to be next examined. Soil of a particular colour and a particular taste was considered suitable for a particular caste. Thus white soil with sweet taste was to be used by a Brahmin, red soil by a Kshatriya and yellow soil by a Vaisya and so on. The shape of the site was to be either quadrangular or square or oblong.

The next rule dealt with in the Āsvalāyana Gr. Sutra refers to the construction of the inner chambers. The next Sutra lays down:—"In the pits in which the posts are to stand, he should have an Avakā i.e. Sipāla (a kind of water plant) put down ; then fire will not befall him." This injunction proves that the earliest houses were supported on wooden posts ; and to save them from fire, aquatic plants were placed at bottom to keep them moist. The central post is then worshipped, which indicates its special importance, as already noted. The Sānkhāyana Sutra enjoins that a sacrifice of cooked messes of food is then to be performed in the centre of the house.

The Samaveda Gri. Sutras—The Gobhila and the Khādira deal with the subject in a more elaborate way and many new topics have been introduced. The selection of the ground is first made on the same principles as described before. The shape of the site should be like that of a brick or a round island. In other words it should be either quadrangular or circular. It should have natural holes all around which were undoubtedly intended to provide good drainage.

Regulations regarding the position of the doors of a house

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are here found for the first time. A special importance was attached to the position of a door in the house. It was supposed that different positions affected the fortunes of the owner of the house in different ways. A particular position was considered benificial, and a different position was considered harmful. Thus one who is desirous of fame or strength should build the house with its doors to the east ; one who is desirous of children or of cattle, with its door to the north ; one desirous of everything, with its door to the South. Let him not build with its door to the west or with a back door" (Gobhila IV. 7. 15-19). The later Silpa Sāstras elaborated the regulations relating to the position of a door, the nucleus of which may thus be noticed in the Grihya Sutras.

The position of trees to be planted around the house was also clearly indicated and people were forbidden to plant particular trees in a particular direction. Thus, one should avoid the Asvatthva to the east of the house, a Nyagrodha to the west, and an Udumbara to the north. These regulations too are mentioned in the later works on Vāstu (Cf. Mat. Puran 255. 20-21 ; Bṛhat Samhita ; Agni Puran etc.)

The next thing enjoined is the sacrifice of a black cow and the placing of the fire in the house. Offerings were then to be made to Vāstospati and the various gods presiding over the cardinal and the intermediate points of the compass. *viz.* Indra in the east, then Vayu in the north east, Yama in the south, the 'Pitṛi' in the south-west, Varuna in the west, Mahārāja in the north-west, Soma in the north and Mahendra in the north-east. Downwards (towards the depths of the earth) worship should be offered to Vāsuki, and upwards to the Sky and to Brahman. The simple worship of the Vāstospati, as found in the Gṛhya Sutras was gradually elaborated till in the later Silpasāstras, the number of the gods worshipped was greatly increased (with the division of the site into 'Padas'

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81 or 64 in number with a god in each pada). The later gods should be compared with the earlier ones.

It is in the Yajurveda Grh. Sutras, that the earliest directions are found for building the house on auspicious days (Pāraskara III. 4. 2). The auspicious moments are laid down in the Hiranyakesi Gr. Sutra (I. 8. 27). The sacrifice inside the house is enjoined in all the sutras of this Veda. The Pāraskara enjoins offerings to a greater number of deities than what is found elsewhere. The touching of the posts and walls is described here also, but a different symbolical significance is ascribed to them. It is said that the eastern posts represents 'luck and glory', the southern ones 'sacrifice and sacrificial fees,' the western ones 'food and the Brahmana' and the northern ones 'vigour and delight'. The chief post, the pinnacle and the door jambs are taken to symbolise the same things as are mentioned in the Sānkhāyana Gr. Sutra. The offerings to the presiding gods of the different quarters have also been enjoined, but some of the gods mentioned here are different from those in the Samaveda sutra. The Hiranyakesi Sutra contains a hymn addressed to the roof which is not to be found in the other Sutras.

Thus the Gṛhya Sutras contain many matters which are of great importance for the architectural history of India. The ceremonials, as has been shown, indicate the earliest or the pre-historic form of the houses of the Aryans. The special esteem in which the central post is held may suggest that, though at the time of the Gṛhya Sutras the houses had many posts, in earlier times the central post was the only one in a house, or at least it was its mainstay. The symbolical meanings attached to the various parts of a house show that Indian architecture had already been clothed in a mystic garb. The different methods of examining the proper site of a building and the allocation of lands according to colour and taste, to particular castes, and the worship of various gods, the auspicious moments for erecting a house, the regulations

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regarding the position of the doors and the trees are the principal subjects relating to Vāstuvidyā dealt with in the Gṛhya Sutras. These subjects were later on elaborated in the Vāstu-Sāstras and thus it is in these Sutras that we find the earliest traditions and principles of Indian architecture, which represent the earliest form of the Vāstu-Vidyā.

The central post is called the Madhyama Sthuna and the roof was constructed with interstices of bamboos placed over the other posts and the central one. A particular kind of building was the Sabhā which perhaps refers to the audience hall or the drawing room, special rules for the site of which are laid down in the Āsvalāyana Gr. Sutra. The other chambers in a house were called the Śarana which were to be made in the intervening spaces between the two beams supporting the roof. There is a reference to the bricks in these Sutras in connection with the forms prescribed for the building site but it is not possible to ascertain whether the bricks were burnt or sun-dried ones.

The Āsvalāyana Sutra further contains a few Sutras (IV. 5. 5-8, and 6. 9-10) regarding the burying of the urns containing the bones and ashes collected from the funeral pyre. These Sutras throw some light on the several Rigvedic hymns (Book X) on the subject. It is almost certain, however, that the Gṛhya Sutras do not indicate the prevalence in India, of the custom of burying the dead at that time, although some have inferred it from the Rigvedic hymns.

We should also refer here to the Sulva Sutras. The rules for different sorts of bricks required for the construction of the 'Agni', on the 'Agnikshetra' (altar for vedic sacrifice), according to the Āpastamba Sulva Sutra, lay down interesting details regarding the length, breadth and bend of bricks assigned to the first class. The Āpastamba Sutra goes on with the description of several classes with detailed accounts of their use in the particular portions of the altar. The size of the bricks depended upon the use for which they were

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intended and their corners were shaped according to the purpose. The layers in which they were to be placed are also mentioned. Baudhāyana Sulva Sutra (Patala III) lays down rules for the construction of the altar shaped like a wheel with spokes. It makes mention of bricks of different sizes and the number required for the structures. The use of bricks in fire altars must have taught the early Indians, as has already been noticed, the knowledge of burnt bricks. Their use, therefore, may be traced to a very early period.

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CHAPTER V.

Architecture in the Age of the Ramayana

Although a great deal has been written on the subject by many Indologists of eminence yet the age of the Ramayana cannot be said to have been settled beyond dispute. It is still a matter of controversy. We may, however, try to form from incidental references a fair picture of the state of architecture during the age of the Ramayana which is unanimously held to be an old epoch of Indian history. That there are in the Ramayana many interpolations of a later age is generally admitted. A thorough perusal of the references, however, shows that the descriptions, wherever they occur of buildings, towns and forts, are almost alike. This shows that the later poets, even while interpolating their own writings in the original epic, followed the old way of describing things. This continuity of old tradition may therefore help us to reconstruct the history of Indian architecture of a very early period.

The descriptions of towns, palaces and forts show that Indian architecture had attained much advanced stage and that a science of architecture had already grown up. Experts in this science (Sthāpatyé niṣṭhitān) were highly honoured by kings and their advice was always sought whenever any kind of structure had to be raised. Maya and Visvakarmā were already famous as the two master-architects of the Asuras and the Devas respectively. In Kishkindhyā Kānda (chap. 51) a story is told of how Maya acquired the knowledge of Silpa-sāstra, the science of architecture, treasure of Usanas (Ausanasam dhanam) from Brahmā. This legend shows that the treatises of Maya and Usanas i. e. Sukra, which are lost, were alike in character. From the Matsyapurana we learn that both Maya and Sukra were once famous as two of the eighteen preceptors of the Vāstuvidyā (Science of Architecture). Other

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references to Maya and Visvakarmā show that the former was an architect of south India, the latter of the northern, eastern and western parts of India, a part of the Deccan and even of Ceylon.

The sacrificial rites involving animal sacrifices, which were performed at the time of a new construction and which are enjoined in the Grihya sutras and the later Silpa sāstras, donot appear to have become a matter of mere form without any special significance. This becomes clear to us when we see that people in the age of the Ramayana strictly observed these rites even when they constructed a small cottage. Ramachandra, for example, is said to have performed the "Vāstupaśamana ceremony" and the animal sacrifice, the "Vaisvadevavali" when he built even a temporary structure in the shape of a mere cottage on the Chitrakuta Mount.[32] Technical words found in the later Silpa sāstras also occur in the Ramayana. The terms 'sthapati,' 'vardhaki', 'takshaka' and sutradhāra were used, to designate different classes of artisans employed in the construction of a house. In later Vāstusāstras the same terms have been given to different classes of artisans, and their respective functions have been defined. [33] "Bhumi" meaning a storey occurs in "Anekabhumi (IV. 33), Saptabhauma (V. 2. 49)" etc. Houses and palaces had already been classified with their appropriate technical names according to their different characteristics. e. g. the Chatuḥsāla, the Padma, the Svastika, the Vardhamāna houses, and the Vimana (palace) called the Pushpāhvaya. All those names occur in later Silpa sāstras and will be explained later on. Forts were also divided into four classes such as the river fort (Nādeya), the hill fort (Pārvatya), the forest fort (Vanya), and the artificial fort (Kṛitrima) (VI. 3).

Towns, forts and 'antaḥpuras' (quarter for females) were protected by strong walls and ramparts ; and ditches were

(32) II. 56. 23 and 32

(33) Mayamatam, V. 13-14.

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dug around to afford additional protection, Four elaborate gate-ways (gopuram) were erected for entrance into the city and each was approached by crossing a bridge erected over a ditch and supported by many pillars and platforms. The entrance was protected by strong doors and bolts. Watch towers (aṭṭālaka) from which the movements of the enemies outside the city walls were watched were also raised. These were the usual essential features of a town, This is apparent from the fact that they were not confined to Ayodhya alone but are also noticeable in the description of Sugriva's capital in Kiskindhyā and of Ravana's at Lanka.

Palaces or ostentatious dwellings were known as Prāsādas Vimānas, Harmyas and Saudhas. There are descriptive passages in which two or three or four of these terms have been used together indicating well-marked differences between them and suggesting a classification of various types of buildings. Prāsādas are described as Saptabhauma, Aṣṭabhauma. Anekabhauma and the like ; and this perhaps shows that the name Prāsāda was usually applied to many-storeyed palaces. The existence of such many-storeyed houses in later times is attested to by the descriptions left by the Chinese pilgrims of such buildings as well as by the archaeological excavations at Nalanda, Sarnath and Kasia etc.[34] The Vimāna type of palaces has been defined in some of the later treatises such as the Vrihat Samhita and the Hayasirsha Pancharatra.[35] Palaces were crowned with domes or pinnacles (sikhara, sṛinga etc.) and one type of Sikhara was also known as the Vimāna, as the expression 'Prāsādāgravimānesu' signifies. The Saudha type of buildings must have derived their name from Sudhā, lime or any kind of plaster, and as such perhaps referred to the white-washed buildings. The definite nature of the Harmyas cannot be ascertained; but the word is also found in the Vinayapiṭaka. Some palaces had many pillars. Thousand

(34) "Excavations at Kasia" Arch. Surv. Rep. 1904-5

(35) Hayasirshapancharatra, Saurakanda (V. R. S. Ms)

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columned palaces are twice mentioned in the Ramayana (V. 15 and VI. 39). The Pushpaka class of palaces, already referred to, is described in details in the Agni Purana, and the Hayasirshapancharatra.[36] These passages are too long to be quoted. The Padma buildings were so called because their shape resembled that of a Padma (lotus).[37] Houses without a door facing the east were called Swastika and those without a door facing the south called Vardhamāna.[38] Besides these, there were buildings like the Vajra (thunderbolt) or Ankusa (the goad) in shape (V. 4. 5-7). In the Matsya Purana (Chap. 217) it is prescribed that cities were to be built in the shape of a Vajra. Buildings were provided with decorated gate-ways (toranas) and as many as seven separate court yards (Kaksha) each surrounded by a row of houses on all sides. Windows were provided for ventilation, and they were either latticed or covered with nets of gold and silver (Hemajāla). These windows are most beautifully described in many passages, which show their importance as decorative elements in the buildings. Over the tops of houses, besides the sikharas and sṛingas (pinnacles), were constructed the Chandrasālās. In Ravana's palace they were like the half or the full moon in shape. The viṭankas or small holes under the cornice for the habitation of pigeons or other birds are one of the other features mentioned. Balabhis were another class of structure attached to a building and probably meant balconies or sun-sheds under which the pigeons clustered as may be found from numerous descriptions in the Ramayana and in Sanskrit literature and the Silpasastras of later times (see Coomarswami J. A. O. S. 1928-P. 260).

In addition to these features, mention is also made of artistic attempts to decorate the houses, and the reference to statues or statuettes in this connection being most remarkable.

(36) Agni Purana, Chap. 104, 11.12.

(37) Vrihat Samhita, Chap. 56, 23

(38) Matsya Purana, Chap. 254, 3.

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Thus Ramachandra's palace-toranas (gates) are said to have been decorated with golden statues (II. 15), and Bharata's camp set with jewelled figures here and there (II. 80). In Lanka Ravana's palace is described as containing many jewelled statues of birds, serpents, horses and of Lakshmi with two elephants on her sides (V. 7. 12 & 14). Figures of Lakshmi are found carved on the Sanchi and the Bharhut toranas and over the doorways of the Anantagumpha cave at Khandagiri in Orissa and of many later temples. This indicated that the custom of depicting the image of Lakshmi on gates and doorways had been in vogue from remotest antiquity irrespective of any creed or cult. This motif was thus a most favourite one with the Indians and its mention in the Ramayana is therefore full of interest. Elaborate staircases are mentioned in many places. They were said to have been built of crystal and valuable materials. The columns were tastefully decorated and set with jewells. They were straight and all of the same size, and were evenly chiselled. Their number in a building, as has already been said, often rose to one thousand ; and this was a good device for enhancing the inner beauty of a building.

Among the religious edifices may be mentioned the sacrificial halls (sabhā), the altar for fire, temples of gods (devāyatana) and chaityas. No detailed description of a Sabhā is found in the Ramayana, whereas the Mahabharata (Sabha Parva) describes in details some of the famous sacrificial halls of the gods. They were generally temporary pavillions but sometimes they were built of bricks (Ramayana I. 13. 8). The sacrificial altar was made of various designs. Dasaratha's fire-altar was made of bricks and had wings like those of Garuḍa, and was twentyeight cubits in length. An altar resembling the shape of Garuḍa is enjoined in the Sulva Sutras. We have no means of guessing what form the Deva-temples took at that period. The chaityas originally meant sacrificial altars, but as they were different from the fire-altars already referred to, we are probably to take them

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as the prototypes of the Budhist chaityas. Another class of buildings referred to in the Ramayana as the chaitya prāsāda (V. 15 & 43), is described as having thousand columns inside with staircases of coral and platforms of gold. The mention of the numerous pillars inside this structure naturally suggests to the mind a building similar to the Buddhist chaityas of later times found at Karle, Ajanta and other places. The description of the chaitya prāsāda in the Ramayana is therefore very remarkable. (See Chap. XXVI)

Sacrificial stakes are also described in the Ramayana (I. 14) as being constructed by artisans and as having eight sides. The earliest sastras from the time of the Brahmanas lay down the rule of making the Yupas eightsided ; and thus eight sided pillars came to be a favourite type in Indian architecture.

But although there are numerous descriptions of various kinds of architectural constructions in the Ramayana, the richness of poetic imagery used in them makes it difficult for us to ascertain the exact nature of the materials used in these buildings. Everywhere the poet praises the jewelled windows, staircases and pinnacles, the crystal floors and walls of gold and silver. Whether so much gold and silver and so many precious stones were actually used cannot at present be confirmed, but archaeological excavations have proved that even in very early times, the Indians had attained great efficiency in the jeweller's and lapidaries' arts. Only in two or three passages of the Ramayana there are references to other materials. Bricks are said to have been used in the construction of the sacrificial hall and the altars. The use of white-wash, whether of lime or of other ingredients, may be inferred from the term 'Saudha' as applied to a special class of buildings. Traces of a coating still to be found on the earliest surviving structures in India, such as the Budhist stupas, also show that white-wash had been in use from very ancient times. Only in two passages we read of stone buildings (Silāgṛiha, V. 14 & 41) and the expression "pillars of stone"

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occurs only in one passage (VII. 16). There being only two references to stone buildings in the entire Ramayana, and the Seventh book, in which there is the only one reference to pillars of stone, being admittedly a later work, we must admit our inability to reach any definite conclusions as to the existence of stone buildings in the age of the Ramayana.

Thus we see that the Ramayana holds before us a picture which shows that Indian architecture had already attained a highly developed stage. While the many-storeyed buildings and fortifications prove the constructive genius of the people, the decorated windows and the toranas and the decorative figures testify to their artistic sense. The references to well-planned high-roads (Suvibhaktamahāpathaḥ) of the towns and the well-divided courtyards of the palaces clearly show that a sense of proportion and symmetry was also not wanting in them. The relative proportions maintained in the construction of buildings of different sizes also point to the same fact. Thus Kumbhakarna's sleeping hall was one Yojana in width and twice as much in length. This proportion between the length and the breadth of a building was maintained by the Indian architects of later times.

In conclusion it may be said that the references to buildings in the Ramayana do not contain anything which may raise any doubt as to the antiquity of the condition of architecture pictured in it. The descriptions ocurring there have a remarkable resemblance to those we find in the Pali jatakas as well as those left by the Greeks who visited, or wrote about, India. Even later interpolations in the Ramayana clearly indicate the continuity of the old architectural traditions of India.

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CHAPTER VI

Architecture in the Mahabharata

The Mahabharata contains many incidental references to the condition of architecture in ancient India. The elaborate descriptions of cities and the sacrificial grounds furnish very vivid pictures of the same. The age to which these descriptions refer, is undoubtedly a long period extending from several centuries B.C. to the Third or the Fourth century A.D. But, in the Mahabharata also, as in the Ramayana, there is a great similarity between the earlier and the later references to architecture which, therefore, helps us to form an idea about the condition of architecture of a very early period of Indian history.

There are many passages in the Mahabharata which explicitly state that a science of architecture (Silpasāstra and the Vāstuvidyā) existed at that time. There are also passages from which one may infer its existence. Thus, the architects are called "experts in Vāstuvidyā" (I. 51. 15). We are also told that at the time of new constructions, sacrificial rites were performed on auspicious days. These rites were called the "Sānti" or the Mangalam (II. 1. 18). It is noticeable that the word 'Pāsādamangalam' occurs in the Jataka stories in the same sense. Sacrifices were made on these occasions (I. 135. 8.) These rites are enjoined in the Grihya Sutras and in all available treatises on architecture.

The names of Visvakarma and Maya, famous in later literature as the authors of architectural treatise are mentioned in the Mahabharata, not as writers but as master-masons of the Gods and the Dānavas respectively. Viswakarma is said to have been the "master of thousand arts, the Vardhaki (carpenter) of the gods and superior to all architects." He also

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constructed the chariots of the gods. Men earned their livelihood by practising the arts invented by him and offered worship to Visvakarma (I. 66. 29-31). Visvakarma constructed the Sabhā of Vaivasvata (II. 8. 1) and a town, for the gods, besides a statue, a necklace and wheels of the chariots, for them. Maya calls himself the Visvakarma of the Danavas. He constructed the magnificent assembly hall of the Pandavas from the materials collected by him from the kingdom of the Danava king Vṛishaparva, situated to the north of the Kailasha near the Vindu lake and to the north-east of Indraprastha (II. 1.5).

In the Mahabharata, we read of Jarā the demoness who brought up Jarasandha, the king of Magadha and who is spoken of as the presiding goddess of a house. Her figure was carved upon houses as protection against calamities. Her name however, is not mentioned in any other work, literary or architectural ; but the reference to her in the Mahabharata clearly points to the prevalence of her worship in at least some parts of India, Besides this, there are references to gods presiding over the quarters, who play an important part in later Indian architecture.

The Santi Parva contains several chapters dealing with the fortifications of cities at the time of danger (XII. 62). The classification of forts into six varieties similar to those enjoined in the Vāstu Sāstras, is also found in the Mahabharata (XII. 5; XII. 86). Houses were also classified according to their distinctive characteristics, each having an appropriate name similar to that found in the Silpasastras. These technical names were derived from the several mystic figures or symbols which were in vogue in remote antiquity. Thus, houses of Svastika, Vardhamāna and Nandyāvarta types are mentioned. The technical names (Such as Pushpaka and Sarvatobhadra) given to royal seats in the Mahabharata were also used in treatises on architecture with reference to temples. A Sabhā called Toranasphāṭika is described in details in the Mahabharata

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These facts clearly show that the process of classification of buildings was already being elaborated. "Bhumi" in the sense of the storey of a building also occurs in the Mahabharata. These technical words as well as the classification of houses, similar to that in the Silpasastras, prove that the science of architecture had considerably developed in this age. (cf "Devatāvādhavarjitam" in p. 51.)

Ordinary dwellings were undoubtedly similar to those which are found in the villages of India in modern times. Thatched houses abounded in the country. But even in the construction of these common dwellings, a systematic and definite plan was followed. They were mostly of the Chatuḥsāla class and there are numerous references in the Mahabharata to houses of this type.

Considerable architectural skill was, however, displayed in constructing the more ostentatious buildings, the royal forts and palaces and the houses of the rich. Forts were of six classes— Dhānva Durga (desert fort) Mahi Durga (earth-fort), Giri durga (hill fort) Mānushya durga (human fort), Mṛid-durga (artificial fort), and Vana-durga (forest fort). This classification, however, differs in some respects from that found in other later treatises. In the Mahabharata, the water fort (Udak-durga) is not mentioned while Mṛid-durga and Mahi-durga can hardly be distinguished. (The reading may be defective here).

In other respects the classification is similar to those we find in the Manu Samhita and the Puranas. The descriptions of the forts given in the Mahabharata enable us to form a clear idea of the defensive structures of a fort. A fort was usually surrounded on all sides by ditches (Parikhā). Thus the ditches of a city are compared in point of their width to an ocean (I. 207. 30). The ditches of Ravana's fort were unfathomably deep (III. 283). Ditches were further made inaccessible by being filled with aquatic animals. Water was made to flow, from rivers, into these ditches by means of hidden gates (Saṃkaṭa-dvāra) (XII. 69). The fort was surrounded

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with a strong wall called 'Prākāra". These Prākāras stood on a rampart called Vapra or Caya, made of the earth collected from the ditches. In the Mahabharata, the epithet 'Saila' i. e. made of stone is applied only once to the Caya. (XII. 170. 19). The Prākāras resembled masses of white clouds or were radiant like the moon (I. 207). Some are called Ratna-prākāra i. e. set with jewels. These walls must have been very high. The adjective 'white' is given to some of them; and this clearly shows that they were coated with white plaster. Watch-towers stoods over the walls, and they were of various forms—the aṭṭa, aṭṭālaka, Pragandi and the like. Other structures which were set up on the walls where soldiers lay hidden and whence they threw arms were called Ākāsajanani, Hudā and Gulma. Walls had towers called Giris. Another kind of structure, often mentioned, was the Pratoli, the form of which is described in the Arthasastra of Kautilya and several Silpasastras.

Ostentatious buildings were of various forms, as is indicated by the names, Sabhā, Prāsāda, Vimāna, Saudha and Harmya. The exact characteristics of these buildings cannot be made out from the short descriptions found in the Mahabharata, but there is no doubt that each possessed peculiar features differentiating it from the others. The Sabhās were assembly halls which were either temporary or permanent structures. Temporary Sabhas were erected on special occasions like a sacrifice, marriage ceremony, a tournament etc. The permanent Sabhas were the audience halls of the kings. The Sabhā of the Danava King Vṛishaparva, mentioned before, was made of crystal and other valuable materials. The hall of the Pāndavas resembled a chariot. It was so skilfully done as to befool many of the visitors. Buildings in the form of a chariot were not uncommon in India, as is evident from the Konarka temple. The descriptions of the inconceivable size of the halls of Indra, Varuna and others may contain poetic exaggeration, yet they unmistakably show that the Indian

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kings lavished great skill and huge sums of money in the construction of their audience halls. Some are described as being without pillars, while others are 'golden-pillared' or 'thousand-pillared'. Sabhās with hundred doors are also mentioned. They were surrounded by walls; and arched gateways (Toranas) provided entrance into them. The Toranasphāṭika Sabha, already mentioned, was one with thousand pillars and hundred doors. The epithet "Sudhā-vadāta" clearly points to their being plastered over with Sudhā or lime-coating. They were tastefully decorated, paintings being one of the usual decorative devices (XIV. 10).

'Prāsādas' were one of the permanent classes of royal buildings, although we cannot be sure if the word has been used in the sense of a temple, as it has been in later times. These Prāsādas were very high and had Sikharas or pinnacles over them. Their white colour indicates their being coated with white plaster (I. 184. 19) and they radiated a glow which the poet compares with that of the moon. Some were made to resemble a chariot. Pillars lent additional beauty and support. Palaces with thousand Pādas or stambhas (pillars) are twice mentioned (V. 143. 30; XIII. 54. 2). The epithet 'Vividha' attached to Prāsāda shows that these structures had already assumed various forms.

In what respects, the Vimāna buildings differed from the Prāsādas is not hinted at by the Mahabharata. Vimānas also were of various classes and the descriptions indicate their abundance in the cities. The 'Saudhas' were buildings of another type, plastered over with Sudhā or lime. The makers of the Saudhas (The Saudhakāras) were often called upon to polish the buildings of a city. This shows that this type of building was greatly liked for its glow and polish. (I. 128. 41). The Harmya class of buildings is twice mentioned and there is no mention of its especial features except the epithet "Hṛidya" or delightful.

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Besides the characteristics of various types of buildings already mentioned, various other features of houses have also been described. For example, houses are described as being as high as the Kailasa mountain. Their whiteness is compared with that of a swan. Many-storeyed buildings have been described as "Anekasata-Bhaumāni" i. e. houses having many hundreds of storeys. Structures variously named the "Balabhî", the Niryûha and the Karnāṭṭa were attached to buildings. The Balabhîs were balconies supported on pillars. The Niryûhas were perhaps the brackets jutting out of the wall and supporting the roof. The word 'Karnāṭṭa' perhaps means the towers or domes raised on the corners of a building. They had Sikhara or pinnacles over them. The commentator explains the word 'Karnāṭṭa' as a house whose roof was constructed by placing square pieces on the lintel and gradually reducing the central space, to be covered, by cutting off the corners and by placing another piece on the diminished space, gradually carrying on the process till the whole space is covered over. This method of roofing was most common in the construction of Indian domes (Fergusson Vol. 1—p. 314) If Karnāṭṭa really means buildings covered in this manner, the antiquity of Indian domes and of the method of their construction is thus established beyond doubt. Doors formed an important feature of cities and houses. The cities had at least four gates, with high structures, called Gopuras, erected over them. Buildings had often numerous doors and a hundred-doored Sabhā has already been mentioned. Windows of two kinds are mentioned—the Gavāksha and the Vātāyana. Pillars formed another decorative element and they are often described as made of crystal, jewels and other kinds of precious substances.

Another structure near the gateway of a city was the Śisumāraśira which, as its name indicates, might have been similar to the head of a sisumara, the aquatic animal 'Susuka'. This structure must be similar to the Hastinakha, a structure

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often mentioned in literature (See Arthasastra and Pali Piṭaka books.)

Among the different kinds of religious structures, mention is made of 'Yupa' the sacrificial post, the 'Vedi', the altar, the 'Chaitya' and 'Devāyatana' the abodes of the gods. The Yupas are described as octagonal in shape and in one passage its height is described with what seems to us to be an obvious exaggeration, as being 1000 Vyamas. (VII. 59. 6.) The head pieces of the Yupa called the 'Chasāla' and 'prachasāla' refer to the head rings. Though they were generally raised as temporary structures during sacrificial ceremonies, the Mahabharata often describes Yupas made of richer and harder materials strewn all over the towns and cities, standing perhaps as monuments of victory. This is evident from references to golden and jewelled Yupas found all over the cities.

The 'Vedis' were the sacrificial altars set up in courtyards or on the banks of a tank. The sacrificial altars, sometimes described as being 18 cubits long, or sometimes as being triangular or Garuda-like in shape were usually made of bricks. The description of these structures is almost similar to that found in the Ramayana. Hopkins holds that the use of the word "Trikona" while describing the shape of the Vedi proves that it is a later interpolation. Even if we accept this view, we should not overlook the fact that the description we get in the Mahabharata has striking points of similarity to the one we get in the Sulva-Sutras.

The exact nature of 'Deva temples' cannot be ascertained from their meagre descriptions in the Mahabharata. The 'chaityas' are described as golden edifices set with jewels and adorning the various cities. They were worshipped by the people. Thus the exact nature of the chaityas also cannot be definitely made out. The chaitya of Girivrajapura had walls or Prākāras. The word is also used in the sense of the sacred tree of a village. The original meaning of the word is 'fire

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altar'; and this meaning is also hinted at in two verses (XIV. 10. 32; 88. 31). It is also probable that in the interpolated verses the word might also be taken to stand for the Buddhist Chaitya. The word 'Vihara', occurs only once in the Mahabharata. This has led some European scholars to think that this word has been used in the sense of a Buddhist monastery (See Ch. XXVI). The structure called the Eḍuka, is similarly taken by scholars to refer to non-Hindu religious edifices.

Although we get numerous detailed descriptions of buildings, we can draw very little inference regarding the materials used. The profusion of gold and jewels might or might not be a mere poetic fancy. The use of white plaster over walls, as has already been mentioned, must have been common. The use of bricks in the construction of altars has been clearly mentioned. Stone structures have been mentioned only twice. (V. 47. 5; XII. 170, 19). The Toranas, walls, ramparts and some parts of the gates of Girivrajapura are said to have been made of stone. No reference to brick-built or stone-built houses is to be found. Hopkins, therefore rightly holds that the architecture of that age, as a whole, cannot be said to have been of stone. (The great Epic of India pp. 391-92). Plastered buildings might or might not have been made of bricks.

Of structures requiring consumate engineering skill, mention may be made of the bridges and dams (Saṃkrama and Setubandha), the Udaka-Gṛihas and the Surangas. The word 'Suranga' according to Hopkins, is a later interpolation (p. 372 Great Epic of India). The units of measurement were the Cubit (Kara or Kishku), the Vyāma and the Yojan.

Some idea of town-planning may also be gathered. The towns are called 'Puras' or 'nagaras'. They were protected by high walls going all around ; and outside them were the ditches, often more than one, deep and of great width. One city had six walls (Saṭpādam) forming concentric circles,

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round it (XV. 5. 16). The walls were broken in places by gateways called the Gopuram, which could be reached by crossing bridges built over the ditches (III. 15. 15.) Other defensive structures raised over the walls have already been mentioned. Inside the town, the streets were planned on a sound scheme. Towns are described as having "well-divided 'Mahārathyās''. In a similar context the word 'Mahāpatha' has been used in other verses. This shows that the two words "Mahārathyā" and 'Mahāpatha' have been used in the same sense. Both these words have been used in the later Vāstu-works in a technical sense. Besides these, there were the extensive 'Rājamārgas' (XII. 69. 53). The streets ran in various directions and crossed one another, the place of junction being an object of worship by the people (V. 194. 58). The epithet "Devatāvādha-Varjitam" applied to streets reminds one of the injunction found in the silpasastras (See "Door in Indian architecture"). On two sides of the Mahāpathas were the shops (III. 206. 8) and sheds for supplying drinking water (Prapā). The prāsādas, Toranas, Yupas, Chaityas and gardens further beautified the cities. All these details of a town enable us to form an idea of the town-planning of the time. Besides the towns, mention is also made of Grāma, Ghosha, Sākhānagara, Janapada and so on.

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CHAPTER VII

Architecture in the Jātaka Age

The Jātaka-stories have been accepted by all Indologists as a store house of valuable information regarding the state of general culture which prevailed in ancient India during the period preceeding the birth of the Buddha. These stories will help us to form an idea of the state of architecture in Northern India during that pre-Buddha age. It is probable that the current Pali version of the Jatakas had its predecessor in earlier Gāthās, handed down to posterity by being sung from place to place. The age of the Jatakas was an early one, not later than the third or the second century B. C.

It may be noted at the outset that architecture in Northern India appears to have been no longer in its infancy in that early age ; for the essential principles of architecture had already been enunciated in the teachings of a number of sages who are collectively referred to in Jatakas (Nos. 257 and 489) as "Vatthuvijjāchāriyas". This expression clearly shows that the sages were the recognised teachers in a branch of knowledge called "Vāstuvidyā" although their names are not mentioned. The Vāstuvidyā is mentioned as one of the arts practised by the Brahmanas during the time of the Buddha (Diggha Nikya : Brahma Jala Sutta, Sec. 21. 17 and 27. 6 and 7 ; "Dialogues of the Buddha p. 17 and 25). We are indebted to the Matsya Purana [39] for an enumeration of the names of eighteen sages said to have been well known from ancient times as teachers of "Vāstu Sāstra". The name of Viswakarma, one of these eighteen sages, occurs in the Jataka literature (Nos. 483, 489, etc.,) in which he is described as an architect of the gods, working under the orders of Indra. Although the exact nature and scope of the Vāstusāstras of the Jataka age cannot

[39] See Chapter X

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be gathered from the stories, yet the mention of many matters connected with architecture fairly indicates that the principal rules and regulations regarding construction, decoration, and ceremonials had already been well established. In a story (No. 489) a prince is described as performing the consecration ceremony of a new palace (Pāsādamangalam—cf Mahabharata). We learn from Silpa Sāstras that sacrifice formed an essential feature of such ceremonies. Such sacrifices were also in vogue in the Jataka age. Technical words used in later works also occur in the Jataka stories ; for example, the word, 'Bhumi' in the sense of 'storey' is used in story No. 541. Palaces and streets had already acquired characteristic designations such as, Kokanāda nāma Pāsāda, (No. 353) Pupphakanāma Pāsāda (No. 525) and Uppalavithi (No. 261). Some of the decorative mouldings with special technical names are referred to in these stories. For example, the term 'Padma' (Cyma Recta), which is the name of the moulding occurs in the expression "Vātāpānasa Vāhira Padumake" or the outside 'lotus' of the window (No. 262). Oṣṭha and Grivā to signify two kinds of moulding are also mentioned in the Jatakas.

Although the bulk of the people lived in that age as they do even now, in flimsy huts, often thatched with leaves and grass and having walls made of reed or wood, yet stronger structures of wood, brick, and stone were not quite unknown in the Jataka age. Primitive huts appear to have reached a stage of development when wood was used for constructing posts, walls, doors, and also for laying foundations to assure greater stability. Story No. 489 describes a Pannasālā (a thatched hut) in which trunks of fig wood were used to construct, and obviously to strengthen, its foundation. Its walls, however, were interwoven with reeds.

Royal residences aimed at greater stability and are described as 'Pāsāda' and 'Vimāna' to distinguish them from ordinary dwellings. Towns had forts (durga). Walls and ramparts (prākāra) were also constructed to protect the towns,

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forts and palaces; ditches (parikhā) were also dug to ensure safety against an invasion. The walls were interspersed with gateways mounted by watch-towers (dvārakoṭṭhaka, aṭṭālaka,) The gopuram, an elaborate gate, (wrongly translated by some as battlements) is mentioned in the Jatakas. Temporary structures like pavillions, rest-houses and camps have also been mentioned.

These different sorts of buildings necessarily required pillars (thamba, khamba, thuna). A kind of pillar set up near city gates as a barrier was called 'Esikani' (No. 182, 545). Railings, balustrades and platforms were also not unknown. The description of an 'ummaga' or an underground tunnel (No. 546) which a certain person, named Mahosadha, had constructed in order to elude the pursuit of his enemies is an instance which shows that underground structures were also not unknown in those days, The description of the tunnel is worth quoting :—

"Sixty thousand warriors were digging the great tunnel. Seven hundred men were working at the lesser tunnel. The earth they brought out in leather sacks and dropped in the city and as they dropped each load they mixed it with water and built a wall. The entrance of the great tunnel was provided with a door eighteen hands high, fitted with machinery, so that one peg being pressed all were closed up. (cf. Avapāta in Kautilya's Arthas astra. On either side the tunnel was built up with bricks and worked with stucco ; it was roofed over with planks and smeared with cement and whitened. In all there were eighty great doors and sixty four small doors * * On either side were a hundred and one chambers for a hundred and one warriors : * * Each had a statue of a woman, very beautiful-without touching them no one could tell they were not human. Moreover in the tunnel on either side, clever painters made all manner of paintings ; the splendour of Sakka, the zones of Mount Sineru, the sea and the Ocean etc., etc."

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References to temples of gods, designated as 'Devakulas' or 'Cetiyas' are found in these stories. This shows that such structures were also in vogue. The word 'devakula' degenrated gradually into the Bengali and Odiya word 'deula' indicating a temple. A devakula is mentioned in one of the royal grants of the Pala kings of Bengal [40].

A fair idea of the materials used in and the artisans engaged for construction and decoration may also be formed from these stories. Carpenters were employed for the construction of a dwelling house (No. 466). This shows that the material used in constructing even ordinary dwelling houses was wood, and that their construction required the carpenter's skill. Story No. 156 gives some details which show how the carpenters "used to shape beams, and planks for house-building (Gehasambhāradāruni) and put together the frame work of one-storeyed or two-storeyed houses, numbering the pieces from the main post onwards." As wood afforded facilities for polish and also for giving all sorts of shapes to the structures and decoration, and as the country abounded in this material, it appears to have been used freely from the earliest times, even while constructing public halls and palaces. A carpenter, who is said, in one of the stories, (No. 31) to have "built a public hall" is described as drying the "pinnacle wood". A king, wishing to have the pillars of his palace renewed, is said to have sent for the carpenter who thereupon "looked about for a tree that would do" (No. 121). In another story (No. 465) a palace column is said to have been designed and shaped out of the trunk of a tree. The pinnacle of a king's room was made of Simsapa and Sara wood (Nos. 396 and 418).

A scientific system of collection and classification of different kinds of wood, used in constructing different kinds of structure or different parts of the same structure, appears to have been established on a practical basis. It was obviously the

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40 Sloka 50, Khalimpur grant of Dharmapala—vide Gauḍalekhamala p. 16.

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result of long experience. The elaborate rules which had to be observed and the ceremonials which had to be performed while going to the forest to select the necessary wood were set forth in detail in the Vāstu literature of a later age [41]. The Jātaka stories, however, indicate that this practice had already commenced. Wood carving, wood-painting, and painting on walls appear to have been fairly in vogue, as is evident from the story of the tunnel.

Various metals including gold and silver and in some cases jewels, were used in the decoration of these structures and the "seven precious things" used for the same purpose had acquired a technical significance. Iron appears to have been more largely used and a story (No. 530) refers to a dome of iron raised over a king's palace. The 'Esika' pillars are said to have been made of sixteen or eigthteen kinds of precious things (ratna).

The Jatakas clearly indicate that the use of bricks was known to the people of the time. References to bricks, both burnt and unburnt, are found in the Satapatha Brahmana and in the Sulva sutras. The story of the tunnel shows that bricks were in use at that time. In the description of the underground tunnel, there is nothing to show that they were not burnt bricks. Dr. Rhys Davids is of opinion that in earlier times "the superstructure of all dwellings was either of wood-work or brickwork" (Buddhist India p. 68.) The Vinaya Piṭaka, compiled not long after the Parinirvana of the Buddha, makes mention of the Buddha's permission that his disciples might use bricks in the basement of their halls, stairs and roofings of palaces (Cullavagga V. 11. 6; VI. 3. 11). [42]

The use of stone in ancient Indian architecture is still a controversial matter ; because no archaeological evidence available up till now takes us beyond the Third century B. C.

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(41) Matsya Puranam chap. 257.

(42) Mohejodaro excavations have revealed burnt bricks.

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As the historical sites of ancient India have not yet been thoroughly excavated, it will not be safe for us to assume that stone was not used in Indian architecture before the Third century B. C. Dr. Rhys Davids notices that "in the books referring to this earlier period, there is no mention of stone except for pillars or staircases. A palace of stone is only once mentioned and that is in a fairy land" (Buddhist India p. 68). This palace of stone has been referred to in connection with Jataka story (No. 545). (Pāsādā ettha Silāmayā). Direct references to the use of stone may be found in other stories also. Thus we read of bases of pillars like mortars of stone (Udukhala Pāsānam) in a story (No. 514), throne of yellow marble (No. 519) ; Giri Durga or hill fort (No. 516) ; and of a stone cutter (Pāsānakoṭṭaka) and stone pillar (Silāthambham) in story No. 476.

Here we get a reliable evidence to show that stone was used in some parts of ancient Indian structures. But the existence of buildings made entirely of stone cannot be safely inferred from it. Stone was easily available and was freely used for many purposes. The reference to a palace of stone, though assigned to a fairy land, cannot be ignored as entirely imaginary.

References to crystal palaces (Phalika Pāsāda—No. 378 ; Phalika Vimāna No. 439) occur in the Jatakas. In one story the Bodhisattva is said to have been a stone cutter by birth. He was an expert in his work and built houses with the materials collected from the ruins of a village (No. 479). The Piprawa casket was a finished article in crystal. Its perfection of construction evidently indicates extraordinary constructive skill which must have been the result of age-long practice. In the Vinaya rules, we find that the Buddha allowed his disciples to make use of stone not only in the basements of their halls, stair, flooring and walls but also in the roofing of their houses. (Cullavagga VI. 3. 11). This is an interesting literary proof of the fact that stone buildings existed in the age

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prior to that of Asoka. Jarasandhaka-Vaithaka at Rajgir, the approximate date of which was the Sixth century B. C, if not earlier, and which was "built wholly of stone neatly fitted together without mortar" supplies an instructive archaeological proof. Structures of this kind must have been few and far between in the earliest times when simpler structures satisfied ordinary requirements. This may account for the rarity of stone-buildings in that age. But, the few examples and literary references cited here may be safely accepted as reliable evidence of the fact that the ancient Indians knew how to use stone in architecture. (Full discussions in Chapter XXVIII).

The Jataka stories reveal the interesting fact that architecture had already come to be recognised as a branch of art. In story No. 353 the epithet 'Pariyadātasippam' is applied to the carpenter. It shows that the carpenter's work was recognised as an art. An attempt to make the structure beautiful and artistic in form appears to have been the ambition of the artist from the beginning. The heavenly mansions mentioned in the story No. 541 are described as being "symmetrical and well proportioned" (Upétam Bhumibhāgéhi Vibhattam Bhāgasomitam). In another story (No. 530) a structure is said to have been 'four square with four fold doors in each, in due proportions spaced" (Chatukkannā Catudvārā Vibhattā Bhāgasomitam). The story of the tunnel (No. 546) shows that structures were made beautiful by wall-paintings the subjects of which disclose a wide range. The next story refers to painted doors. Another story (No. 524) describes a dwelling in the following words ;—

"A dwelling bright in splendour, to outvie
The lightning flash that gleams athwart the sky.
Fashioned with gems and gold divinely fair
And decked with paintings manifold and rare".

Decorated rooms and chambers (Alamkata Sirigabbha) are mentioned in story No. 458. The Cullavagga (VI. 3) not only

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refers to plaster works of different colours—white, black, and red but also contains directions as to how to prepare them. It also lays down instructions relating to the art of drawing pictures on plaster works. (Vide Dr. Rhys Davids' Buddhist India p. 68). In story No. 541, divine mansions are described as being "set around with Indra's statues". The description here is no doubt of an imaginary divine mansion but in the story of the tunnel, however, we get the description of a terrestrial tunnel adorned with female statues.

A standard measurement for the construction of buildings appears to have been adopted from the earliest times. The terms "Kukku" and "Vidatthi" which are technical terms to denote measurements employed in architecture occur in the stories. According to the commentator the word 'Kukku" meant "Aratni" i. e. a cubit, "Vidatthi" was equivalent to the Sanskrit word "Vitasti" meaning a span. The height of the door of the tunnel already referred to is said to have been eighteen cubits. Similarly, a turret is described in the following words :—

"The peak's a cubit and a half in height.
Eight spans will compass it in circuit round" (No. 396.)

Different kinds of palaces (Kokanāda, Pushpaka, etc.) having different forms are mentioned. Some were constructed with only one pillar (Ekathunakam or Ekathambham) as in the stories (No. 121, 454 and 465). The translator considers that those buildings were "round towers". Palaces with many columns were not unknown. This is clearly indicated by the expression 'Vahuhi thambhehi Pāsādakaranam' which occurs in story No. 465. In story (No. 543) a palace with thousand columns is also mentioned (Sahassathambhā Pāsādā) Palaces were surrounded by walls having gateways. Different sorts of walls were also used. The walls of buildings were called "Bhitti' and their foundation "Bhittipada" (No. 489). Verandahs or porticoes were attached to buildings and were called "Alindaka". The term "Uparipāsādatala" or the 'upper

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storey of a palace' covered with a roof surmounted by a pinnacle called "Kannika[43] (stories Nos. 396, 418,) shows the development that took place in the science and art of architecture. The form of the pinnacle may be guessed from the word "Thupā" which the writer has used while describing it (No. 541). Palaces with many pinnacles and storeys are also mentioned in some of the stories. The following significant sentence occurs in story No. 525 :—

"Pupphakam nāma Pāsādam āruhya sattamāya bumiyā thito" i. e. having got upon the palace called Pushpaka, he stood on the seventh storey. The 'Pushpaka' kind of Prāsāda is also mentioned in the Ramayana and the later Silpasāstras. Seven-storeyed Ziggarats of Chaldea and many-storeyed later buildings in Ceylon show that such structures were planned and built in many countries perhaps under a common idea. The reference to such structures in the Jatakas need not be regarded as instances of borrowing from Chaldean models. The drawings of buildings casually represented on the Sanchi and Bharhut gateways before the birth of Christ give us a fair idea of the style of ancient architecture. The figure of a round towered hall sculptured on the Bharhut gateway throws some light on the nature of the building, with five Thupas as its pinnacles, mentioned in story No. 541. The word "Torana-dvāra", which occurs in the Jataka (No. 537 and 404) indicates arched doors or windows. Such doors and windows are also found depicted on the Bharhut gateway. This shows that they used to be constructed in very ancient times.

The word "Gopānasiya" in a Jataka story (No. 396) deserves attention. It obviously suggests the Sanskrit word "Gopānasi" which, according to "Amarakosha", (Puravargādi) means the curved wooden rafters supporting the roofs of balconies. Representations of such roofed balconies may still be found

(43) Acc. to Coomarswamy, the word means a 'circular roof plate' and not a dome or tower (J. A. O. S. 1930). But even then it signifies existence of circular towers on buildings.

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in the curvings on old gates. Such balconies have been found also in later times. The Vastu-Sastras contain reference to their existence in temples.

Watch towers with quarters for the watchman called "Attālaka", and simple towers without such quarters called "Kotthaka" near or upon the gateways of towns, and "Mandapas" or pillared halls used as rest houses for travellers are also mentioned in the Jatakas. The references show that they were essential features of big cities and fortifications (Nos. 534 and 458). Some idea of these structures may still be formed from a description in the Jataka story (No. 546) viz ; "Attālakā oṭṭhagiviyo' lohitamkomasāragallino". This has been taken to mean "watch towers whose mimic lips and necks (are) with rubies or cat's eye jewels". The words "mimic lips and necks" are evidently technical names of mouldings which formed a beautiful feature of Indian buildings. References to such mouldings are found in later Silpasastras.

Pillars are described in these stories as being made not only of wood but also of stone. In every case they are mentioned as pillars with eight faces—Aṭṭhamsa (Nos. 541 and 543). Octagonal pillars which have come down to modern times, thus appear to have been introduced in the earliest age. The construction of such pillars is enjoined in the Satapatha Brahmana (3. 6. 4. 27). Pillars of fantastic shapes, as we find in the Cullavagga (VI. 14) appear to have been built according to the fancy and desire of the builder. Visakha wanted for the Samgha a "Sālindam pāsādam hatthinakhakam" which, as Buddhaghosha has explained it in his commentary, means a mansion with verandahs decorated with or supported on "the frontal globes of elephants". Drs. Rhys Davids and Oldenburg have translated the expression thus :—"a storeyed building with a verandah to it, supported by capitals of elephant's heads." This description not only shows the use of capitals surmounting the pillars but also the artistic shapes devised for them. Many specimens of such capitals are still found amongst the survi-

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ving structures, as for instance, the columns in the nave of the Karle chaitya and those in the Gateways at Sanchi. (For Hastinakha see Chap. IX).

Doors, windows, lintels, stairs and cornices are incidentally mentioned. A staircase is called "Sopānam" (No. 483) Some buildings had more than one staircase. Door lintels were called "Uḍummāra" which is same as the Sanskrit words Udumbara" or "Uḍumbara" (No. 303). The word primarily indicates a species of the fig tree. It is probable that the word came to have a technical meaning to indicate a lintel because originally lintels used to be made of this particular tree. Windows were devised for purposes of ventilation. That this was their main purpose is clearly suggested by their name "Vātāyana" i. e. "passage for the entrance of air". Windows of different shapes and different decorative designs are also mentioned (No. 262). Latticed window or window with perforated screens appears to have been common. This is indicated by the reference to a class of windows named "Simhapanjara" (literally meaning "a lion's cage") which has been taken to mean "latticed windows".

The word Chaitya originally derived from the word "chiti", came gradually to be understood, in the Jataka period, in several general and technical senses. It referred to shrines of all sorts as well as those of a particular type. The "chaitya" does not appear to have been an invention of the Buddhists. Similarly, the word "Thupa" which occurs frequently in the Jatakas has not been used in the technical sense of a Buddhist structure of that name. Stupas were built either as memorials or receptacles of the remains of the deceased. A king "taking his father's bones from the place of cremation erected an earth mound in his pleasure ground and depositing his remains there adored the tope with flowers" (No. 352). Topes of sand were also raised over the ashes (No. 438). A stupa of sand is still erected by people who perform the Sraddha ceremony at Chakratirtha at Puri, The custom of erecting Topes

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of sand on the remains of the deceased perhaps indicates the primitive methods of Stupa-construction and the custom finds a mention in the White Yajurveda (Chap. 35). The mention of such structures in the Jataka stories does not show how far the art of constructing these memorial structures had developed in that age. Dr. Rhys Davids has shown that baths and drains were also constructed in that age. Such constructions indicate considerable development of architecture in the Jataka period.

In a story (No. 518) we find the description of a city with ditches and moats around. The streets were lined with houses and shops. Such descriptions of towns in the Jatakas are very similar to those found in the Epics.

यथापि अस्स नगरं महन्तं
आडारकं आयसं भद्दशालम्
समन्तखातापरिखा उपेतम् ॥

Thus the Jataka stories supply us with valuable information regarding the state of Indian architecture in that age. The existence of the Vāstuvidyā in a developed form may also well be inferred from the study of these stories.

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CHAPTER VIII

Architecture in Pali Canons.

The pali Buddhist religious texts contain many incidental references to the condition of early Indian architecture. The Mahavagga and the Cullavagga, when carefully examined, yield many information about the subject. It may be noted at the very outset that in the pali books we have clear reference to the Vāstuvidyā or the science of architecture. Thus in the Digha Nikāya in the Brahmajālasutta (Secs. 21 and 27), it is said that the brahmins used to practice the Vāstu-vidayā—mentioned here as 'vatthukammam' and 'Vatthu parikiranam'. The pali Jataka stories also refer to this science.

When the pali canons were compiled, architecture had already attained to a considerably developed state. The references indicate that considerable progress had been made in this direction not only on utilitarian but also on a highly artistic basis. Particular structures had already got various forms. The descriptions of buildings are almost similar to those found in Sanskrit literature and the Vāstu works.

The fifth and the sixth chapters of the Cullavagga contain the names of the structures which were, according to tradition, permitted by the Buddha to be used by his disciples. These two chapters are the main source of our knowledge which is supplemented by references from other books.

Houses were called Lenas (Layana in Sanskrit). Five kinds of buildings were allowed to be used by Buddha's disciples ; viz., Vihāra, Addhayoga, Prāsāda, Harmya and Guhā. Each of these must have possessed some special features distinguishing it from the rest. The word Vihara is often used in the sense of a monastery in general, but in the age represented by this Vagga, the term must have denoted an special kind of structure. The old rock-cut caves now found in various places of

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India may be divided into two distinctive classes—the chaitya and the Vihara. The Vihara of the Pāli canon might, therefore, have been the structural prototypes of these rock-cut Viharas. They consisted of a large hall having small cells all around, most of which were to be entered from the central hall. The monasteries at Sarnath and Nalanda may also be taken to represent the ancient form of the Buddhist Viharas. The mention of it in the Cullavagga may suggest that Viharas existed even before the rise of Buddhism (See Chapter XXVI).

The word 'Addhayoga' is still more difficult to be explained. Buddhaghosa explains it by saying "Suvarna vangageha" which may mean either 'a house made of gold and tin' or a peculiar kind of building prevalent in a country then known as Suvarnavanga. The latter meaning is doubtful on account of the fact that we do not know of any place called Suvarnavanga. A similar word has, however, been mentioned as the name of a country in the Arthasastra, where Suvarnakudya has been referred to along with Gauḍa. If Suvarnakudya be taken as the same as Suvarna-vanga, the word may be taken to refer to Karna-Suvarna, the famous province in Bengal. The house of Addhayoga type may then be taken to denote the ancient Bengali house which is represented in the few surviving temples of Bengal, the Jorabāngla type of temples. Buddhaghosa's "Suvarnavanga geha" has, however, got another reading "Suparnavanga geha" which means a house shaped like the Garuda bird. This reading naturally suggests a form for the Addhayogas very common to Indian structures. The altars were constructed, according to the Sulvasutras, the Ramayana and the Mahabharata, in the shape of the Garuḍa bird. The Matsya Purana, Vrihatsamhita and other Vāstu works refer to temples called Garuḍa, because they were similar in shape to the bird of the same name. The addhayoga buildings may, therefore, refer to the Garuda class of buildings.

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Prāsādas were the most common type of Indian buildings and references to it are innumerable in Indian literature. They were the many-storeyed towered buildings of ancient India. In Pali literature they are described as having an 'alinda' (veranda) and a 'hastinakha' (See Chapter VII and IX). Prāsādas thus existed before the rise of Buddhism (See Chapter XXVI)

The 'harmya' denoting a class of building is also very common in Indian literature. It occurs in the Rigveda as denoting an especial class of building. The lexicographers do not lay down the characteristic features of this type of building but simply explains it as 'dwellings of the rich'. The silpasastras, however, show that Harmmya was a particular type of building (see Samarāngana Sutradhara and Mayamatam). Buddhaghosa also was acquainted with the real meaning of the word when be explained it by 'a prāsāda on whose top has been placed a Kutāgāra". This meaning is almost similar to the definition of the word in the Samarangana. Kern takes the word to mean "a stone house with a flat roof" and a verse in the Mayamatam may point to a similar meaning. Why Kern took it to denote especially a stone house cannot be ascertained.

The Guhā was the artificial or the natural cave. Buddhaghosa explains it by Guhā made with bricks, Guhā of stone Guhā of wood and Guhā of sand. Guhā, therefore, refers to the buildings under the ground. The Silāguhā may denote the rock-cut caves and the others were perhaps similar to the buildings in the tunnel of Mahosadha of the Jataka stories and the underground chambers in royal palaces as described in the Arthasastra. A brick-built Guhā called the Jogi Gumphā still exists in the Dinajpur District in North Bengal.

Besides these five classes of buildings, mention is found of the Sālā and the mandapa. The mandapas had basements under them, as is evident from epithets "Nicavathukam" or Uccavathukam".

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The buildings consisted of many chambers called the garbhagṛiha. They were of three different forms the Sivikā-garbha, Nālikāgarbha and Harmyagarbha. The Sivikāgarbha was similar in shape to the palanquin. Buddhaghosa therefore, explains it as "a square chamber". The Nalikāgarbha was one having its length twice or three times as much as the breadth, which, therefore, was rectangular in shape. The meaning of Harmyagarbha is not clear and even Buddhaghosa is in doubt about its significance. He gives two meanings "a chamber consisting of a Kutāgāra (a small room) on an upper storey" or one "Mudandacchandana" which cannot be explained. The first meaning may refer to rooms having another small chamber on the wall of the former, as is still to be found in many houses. Small subsidiary chambers were known as Koshthakas, used as store-rooms or bath rooms.

Around the chambers were the pakuttha or the 'inner Verandahs'. Outside it was the covered terraces called the Alinda or a porticoe. In the buildings having no alinda, a shed was constructed over the doorway for throwing off the rain-water, called Osaraka or Apasārakas.

The walls were called the "bhitti". Those of many of the ordinary houses were first covered over with skin and then plastered over with Sudhā or lime. Richer houses had stronger walls made of bricks and the lower parts of the walls of even a bath room were built of brick. The buildings had enclosure walls built of brick, stone or wood.

The roof of many houses were covered over with skin, plastered over with Sudhā. This kind of roof is referred to as the Sudhācchadanam. Roofs of bricks (Ishtakācchadanam) and stone roofing (silācchadanam) are also mentioned which indicate buildings completely made of bricks or stone. Whatever might be the actual age (It could not be later than 4th century B. C.) when these chapters were written, do these references not clearly point to the existence of stone or brick architecture in India? Strangely enough, these stone and

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brick roofs mentioned in the Cullavagga have not been mentioned by any scholar who utilised the other materials from these chapters.

The doors, windows and stairs have been described in these chapters in detail. The door-leaves are called Kapāṭa, the post and the lintel called the 'pṛiṣṭha samghāta'. Presumably, the doors had no hinges ; but the upper and lower ends of one side (called pāsakam) projected into hollows prepared for them in the lintel and the threshhold. The bolt was called the Sucikam and the piece of wood through which it passed was the Kapisirsaka, perhaps because it resembled in shape the head of a monkey. (See Arthasastra.)

Windows were known as Vātapāna or Vātāyana and they were of three kinds-Vedikā-vātāyana, Jālavātapāna, Sālaka vātapāna. The vedikā windows, according to Buddhaghosa, were those resembling the railings of a Stupa. The Jāla Vātāyanas were the latticed windows, and the sālakavātāyanas contained bars or pilasters in it. The window-blinds are perhaps meant by the word Vātapānacakkalika.

Stairs were made of brick, stone or wood. The balustrade was called that Ālambana Vāhana. In the Mahasudassana Sutta (I. 59), a sopāna is described as having steps containing a thamba (post), a suciya (cross bar) and an ushnisha (coping bar) running along the top of the posts.

The descriptions of the various structures supply information as regards the materials used. Mention is made of thatched cottages, wooden houses, houses with skin over the walls and roofs. Use of brick and stone is mentioned in connection with the construction of basements, stairs, floors, enclosures, part of the wall and the roofs. The mention of brick-made and stone-made roof warrants us to infer that stone-built and brick-built houses were not unknown in ancient India.

Various kinds of plasters—used over walls and roofs—are mentioned. They were of different colours—white, black and

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red. To make the plasters lie fast on the walls, a kind of slime of trees (Ikkāsa) or a paste (pellhamaddan) was used. One kind of such paste was made of mustard seed and oil of bees wax. Over these plasters, paintings were inserted in order to decorate the walls and the roofs. The various motives of these paintings are mentioned in a list in the Vinayapitaka e. g. wreathe-work, creeper work and so on. (Vide Buddhist India p. 68). This list of paintings is similar to one mentioned in connection with Mahoshadha's underground chamber of the Jataka story. Figures of men and women and other imaginative subjects were prohibited to be painted on the walls of the Viharas. The painted chambers are called 'chitrāgāras' which may be equivalent to the word, 'Chitrasālā' in the Epics. These paintings, therefore, prove the artistic development of the Indians, which culminated in the magnificent paintings in the Ajanta Caves.

The many-storeyed dwellings, the under ground chambers and the stone roofs indicate the developed engineering skill of the Indians. The painted chambers, the latticed windows and the stair-balustrades attest to their aesthetic culture. The drains, the dams and the baths, described by Rhys Davids, are further proof of the developed state of Indian architecture.

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CHAPTER IX

Architecture in Kautilya's ARTHASASTRA

The newly discovered Arthasastra ascribed by its finder to Kautilya, or Chanakya, the famous priestminister of Chandragupta Maurya is a source of much rich information to the historians of India. Whoever might have been the real author of the work and whatever might have been the real age when the book got its present shape, there can be no denying the fact that the book contains many old traditions of the various spheres of activities of the Indian people. The state of architecture as found in the Arthasastra is, therefore, an interesting and valuable study and cannot be later than that of the First Century. A. D.

Besides the numerous references scattered throughout the book, the Artbasastra contains several chapters mainly or solely dealing with architecture. But as it is a totally non-religious work, the subjects dealt with in these chapters all refer to the structures of civil nature as opposed to the religious. Very few structures of civil architecture of ancient India survive at the present day and very few have also been re-excavated. So there is now no means of verifying the descriptions as found in the Arthasastra, and passages are apt to be wrongly interpreted. In spite of these difficulties, a thorough study of the relevant passages with the help of the later works on Architecture, may be helpful for a complete investigation of the ancient Indian architecture.

Buildings including other engineering work were called 'Vāstu'. In book III. Chapter 8, the word Vāstu has been defined thus: "Houses (or the sites of houses), pleasure gardens (Ārāma), "Setubandhas" (or Embankments and

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bridges) and lakes are called Vāstu". This meaning of 'Vāstu' is also apparent from the definition of the Silpa-Sāstra (a part of which was the Vāstu vidyā) as given by the Sukraniti-sara which says. "The sages called that the Silpasāstra (Treaties on Fine Arts) in which are related good works such as the Prāsāda (Palaces or temples) and images, Ārāmas (pleasure gardens or groves); houses, and the tanks"[44] The definition of a 'Vāstu' as given in the Mayamatam[45] also bears a resemblance with that given in the Arthasastra. The Arthasastra, however, does not directly refer to the technical science of Architecture (the vāstu-vidyā) which in some form or other must have been known to the Indians from the time of the Grihyasutras and the Pali Jataka legends. But the several chapters, dealing with architecture in the Arthasastra, cannot but be repetitions of the old traditions, prevalent from an earlier period in India, relating to Indian architecture. The technical words used (noted in the following pages) and the complex character of the constructions presuppose the existence of a science. In the chapter dealing with the construction of forts, one of the suitable sites for a fort is said to be "a land best suited for a Vāstu" (Vāstukaprasastadesa). As the term has not been further explained it shows that the Indians well knew the rules for selecting the best site for a building, which formed one of the essential parts of the Vāstuvidyā.

The different kinds of roads with appropriate names for each are the further proofs of the existence of a developed science of architecture.

What was the form of the Vāstuvidyā in this period we have no direct reference to prove. But from several expressions it may be concluded that the most essential features of it had already been enunciated and the regulations were being followed in practice. Two passages in the Arthasastra suggest

(44) Sukraniti Ch. 49. 299.
(45) Mayamatam ch. 2-1,

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this conclusion. In the chapter dealing with the "Planning of the fort" (Durga nivesa-Book II. Ch. 4), it has been said that "The king's private dwelling house (Antaḥpura) should be constructed, according to rules already laid down, facing either the north or the east, in the midst of the houses of the people of all the four castes and to the north from the centre of the ground ("Vāstu-hṛidaya") and occupying one ninth of the whole site inside the fort (nava-bhāge)". The expressions Vāstu-hṛdaya and 'Navabhāge' can be best explained with reference to the Silpasastras. According to all the works on Architecture, a Vāstu in the sense of the ground occupied by a building is said to consist of several padas or divisions, their number varying according to the nature of the building and each being the resting place of a presiding deity. The centre was thus the place for Brahmmā. The whole site was compared to the body of a man and the central Pada was called the "Hṛidaya" or the breast of the Vāstu. This explains the significance of the word 'Vāstuhṛidaya' in the passage. Again, according to all the texts, the site of a dwelling house should be divided into 81 Padas, the whole area being so divided that each side should have nine Padas. The significance of the prescribed site and the area (viz. $\frac{1}{5}$ of the area) for the dwelling house is that it should occupy 9 Padas in centre.[46] The doubt that may still be held as to the real existence of the system mentioned above in the time of the Arthasastra is completely removed by the second passage, which occurs a few lines after the one quoted above.

After describing the temples to be constructed in the centre of a city, the author says that "In the "Koshṭhakālayas" the Vāstudevatās should be set up according to their fixed position.

The word Kosṭhakālaya is formed of two words "Koshṭhaka and Ālaya and means the Ālayas or temples on the

(46) The Vâstusâstras prescribe the division of the site of the Royal houses into 81 Padas. (Samarang S. Ch. 15.9).

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Koshṭhas. In the Silpasastra this word 'Koshṭha' means the divisions or the Padas referred to above (Brh. Sam. 53.46). They were, each of them, as already said, presided by a deity called a Vāstudevatā and the passage in the Arthasastra, therefore, must be taken in this light to direct that in each division of the vāstu (site) a temple of the God, said to preside over that particular Koshṭha or division, should be constructed. The real significance of the two passages quoted above cannot be explained unless we hold that the Vāstu Vidyā with its complicated ceremonials was perfectly known during the period described by the Arthasastra. Dr. B. B. Dutt's (Town-Planning in Ancient India f. n. p. 149) opinion that Padavinyāsa was unknown to the Arthasastra cannot be supported.

Private houses were mostly of a flimsy character. Indian villages must have been full of cottages as they are even at the present day. But at least in the towns, houses were constructed on sanitary and regulated principles, violation of which was punished by the state. These rules, occurring in the Book IV. Cha. 8, mostly relate to the position of drains and other places of refuge, to the space that should have had to be kept open between two houses, and to the means for ventilation of air in the rooms. Each house had an 'Ani-dvāra (i. e. a gateway) and a boundary wall. Windows were small and had to be raised on high. A special rule is laid down to ward off the evil consequence of rain, but the true nature of the construction cannot be made out from the text.[47] From the sutra, the only point to be inferred is that "Kaṭa" or mats were used in parts of the buildings. Mr. Sham Sastry takes them to be forming the covering of the roofs. But the meaning seems to be inconsistent with another rule which directs the officers in charge of the town to pull down those roofs which were covered with mats and grasses.

Of the more substantial and artistic structures, the most important is the king's palace called a "Prāsāda". Structures of

(47) Arthasastra, translation by Shamasastry p. 212 (1915 Edition.)

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other kinds are indicated by the words 'Harmya', 'Sabhā' and the like, each of which referred to peculiar kinds of structures. Fortified towns or capitals were called 'Durga' and elaborate descriptions of the fortifications form the major part of the chapters dealing with architectural matters. Ditches, ramparts, walls and watch towers of different forms were the several features of a fortification. Gateways of different forms adorned the entrance to a city or a palace. Those on the city gates were called Gopuram and those forming the entrance into the houses were called 'Toranas'. The treasury house, the sheds for merchandise, the prison houses and underground rooms were the other notable constructions of the period.

Structures on the borders of a capital—those meant for guarding the city—are described in detail in the Arthasastra. The ditches were called 'Parikhā'. They were dug outside the city-wall and were three in number, one six feet (1 danda) apart from the other. They were 14,12 and 10 dandas respectively in width and the depth was half or three-fourths the width. Thus their depth varied from 30ft. to 63ft. The bottom was made into a square (?) and as the two banks were made with a slope inwards, the width of the ditches at bottom was one third the width on their upper part. The sides were then inlaid with bricks (ishṭakena) and slabs of stone. They were filled with water either of the rains or from some other source ; contrivances to flush them, whenever necessary, were perhaps not unknown.[48]

At a distance of 4 dandas or 24 ft. from the (innermost) ditch, a rampart (Vapra, Chaya) was made heaping up the mud raised from the ditches. It had the form of a platform or the sides in its middle part might have bulged out a little giving a pitcher-like shape to the structure. The rampart was 6 dandas or 36 ft. high and twice as much in depth.

The rampart formed the foundation for the city wall called

(48). Cf. Samarangana S. Ch. 10 verses 17-22.

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the Prākāra or the 'sālā'. The wall was made of bricks or thick slabs of stones. It had a width or depth of 12 cubits or might have more, the maximum being laid down at 24 cubits (or 36 ft). The height was twice the breadth (i. e. from 36 ft. to 72 ft.). Thus the wall together with the rampart formed a barrier with a height which ranged from 72 to 108 ft. The depth of the wall was sufficient for chariots to pass over them and perhaps such passages were meant by the word 'Rathacharyā-Sanchāram' which was an epithet of the Prākāras. The uppermost part of the wall was decorated with turrets of different materials and forms ; some resembled a drum and were made of the trunk of a palm tree, others were made round in the form of the head of a monkey.[49] It has been directed in the Arthasastra that city walls should never be made of wood. This has been taken by Winternitz as showing the difference between the state of architecture in the Arthasastra and that as described by Megasthenese, the Greek envoy of Chandragupta's court. According to Megasthenese, Pataliputra, the capital, was guarded by a wooden palisade. The condition of architecture as found in the Arthasastra is, according to Winternitz, therfore, of a later date than that of the early Maurya period.[50]

"Attālakas" or watch-towers were built over the wall. They were square in shape and access to them was by movable staircases rising up to the height of the building. One tower was separated from the other by an intermediate space of 30 dandas (or 180 ft.).

Between each tower in the intervening space, stood a two storeyed 'Pratoli' with a harmya on it and measuring (in height) twice and a half as much as it is broad. The exact nature of the 'Pratoli' can not be ascertained. The word is, however,

(49) 'Kapiśirsha' was a sort of turret mentioned in later Silpasastras, and had the shape of a money's head (cf. Samar. S. Ch. 10. 25-32)

(50) The difference may be explained by reference to what Megasthenese says about materials used in Indian buildings—on rivers and on high places (*see* below).

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an important one, for its occurrance in the Bilsad stone pillar inscription of Kumargupta of the year 96 Gupta Era (416 A.D.). In the Gupta inscription, the structure[51] has been compared with a 'Staircase of heaven' and Cunningham interpreted the word as 'a gateway with a flight of steps'. Dr Fleet accepted the interpretation. The description of the building as a two-storeyed one, as evident from the description in the Arthasastra and the Samarangana Sutradhara[52], therefore proves that Cunningham was near to the truth in his interpretation of the Pratoli buildings. It is therefore certain that the word Pratoli had other meanings, besides that of a broad street, as given by the lexicographers, who made the word a synonym of Rathyā i. e. a chariot road. Hemchandra seems to be more accurate in placing Pratoli and its synonyms by the side of the word 'Gopuram' another structure built over the entrances.[53]

In the space between the Aṭṭālakas and the 'Pratoli' were the small structures called the 'Indra Kosha' which were perhaps small chambers made up of planks and having holes on its walls for throwing arrows. There was room in it for three archers only. The word is found noted by the lexicographers but the nature of the building cannot be made out from them.

The entrance into the fort was through a Gopuram, an elaborate structure built above, three fourths of which resembled the face of a Godha (Iguana), a crocodile-like creature most common in Bengal. In front of the door was a structure called 'Hastinakha' which was, as explained by the lexicographers[54], an earthen mound at the gate of a city. Commentators further explain it as a structure, built of earth, resembling the nails of elephants and gradually coming down

(51) Fleet—Gupta Inscriptions no. 10. ll. 10-11.

(52) Sam. S. Ch. 10 verse 38.

(53) Purdvāre' Gopuram Rathyā Pratoli Visikhā Samāḥ" (Abhidhāna Chintāmani IV. 981).

(54) "Parikuṭam Hastinakho nagaradvārakuṭake"—Hemchandra Abhidhāna Chintāmani.

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with a slope to the city-gate. The word also occurs in the Sisupalabadham where it is described as a raised earthen mound, projecting the access to the gate of a city or fort and furnished with an inner staircase and with loopholes for discharging arrow. From the mention of the word in the Arthasastra along with a 'Sankrama' or movable bridge, we may infer that the 'Hastinakha' was also used as a staircase for going out of the fort, as the commentators explain it to be.[55] The Cullavagga of the Vinayapitaka (VI. 14) contains this word, which is explained by Buddhaghosha as 'structure resembling the frontal globes of Elephants." or 'supported on elephant's frontal globes'. (See Chap. VII). Besides the 'Hastinakha' there was either a movable bridge as wide as the opening of the gate[56], or an immovable one, sometimes made of earth where there was no water. There were twelve gates, each at the extremity of a street, piercing the city wall, four of which, each on one direction, were considered as the principal ones. They were called the Brāhmma, Aindra, Yāmya and Senāpatya according, perhaps as they faced the north, the east, the south and the west. These technical names show the developed stage of the science of the Vāstu (vāstuvidyā) at the time of the Arthasastra.

Besides these artificial forts, there were the natural forts used at the time of wars by the kings. They are called Durga supplied by God (Daivata Durga), and were classified into Audaka (water fort), Pārvata (hill fort), Dhanvana (Deserts) and Vana (forests). A water fortification is such as an island in the midst of a river or a plain surrounded by a

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(55) Puradvāre' = Vatārānārtham kṛitasya kramanimnasya mṛit kuṭasya." (Bhanuji Dikshit's commentary on Amarakosa).

Coomarswamy (J. A. O. S. 1928, p. 259) takes the word to mean 'a pillar with elephant capital' or a 'draw bridge'. But the lexicographer clearly mentions that it was made of clay. It was like an underground chamber with a slanting roof and not a pillar.

(56) I take the word 'Mukhasama' in this sense and am supported by Kshiraswami the commentator of Amarakosa, who quotes this very sentence.

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low ground ; a mountainous fortification is such as a rocky tract or a cave ; a desert is such as a wild tract devoid of water and thickets or a land growing in barren soil ; and a forest fortification is such as is "full of wagtail and water or full of thickets". This division of the natural forts may be compared with that made in the Manu-Samhita, the Puranas[57] and later works or architecture. The description in the Devi Puran, however, is the one most closely related to the Arthasastra passage.

Inside the fort, to the north of the central part of the city, was, as already explained, the king's residence, covering a ninth part of the whole area.

The private quarters called Antaḥpura of the king was also guarded by ditches, walls and gateways, and comprised of many courtyards with houses surrounding each of them. The palace was constructed in the same way as the treasury house, which will be noted later on. There were other kinds of buildings too. The king often lived in a delusive chamber with hidden walls and passages. There were also underground chambers and palaces connected with many hidden passages cut through tunnels. Other buildings were fitted with exits through hollow pillars and pits fitted with mechanisms for catching enemies and thus used as traps[58]. The existence of underground structures is proved by the beautiful description of the Suranga, cut for the purpose of escaping from the enemies, in the Pali Jataka story (Jataka No. 546) already mentioned. The description in the Arthasastra of different kinds of underground structures therefore should not be taken as pure fancies.

The walls of the palaces were generally made of bricks as is evident from the direction to make it Aishṭaka (B II, Chap. 5).

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(57) Devi Purana Ch. 72-ll. 104-28.

(58) I have taken the word 'Avapāta' to mean 'pits for traps' and not the fall of house as shamsastry takes it to mean.

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But in book I. Chap. 20, it is said that the walls of the Antaḥpura should be covered over with mud mixed with "lightening-ashes" (Vaidyuta-bhashma) and hail-water (Karaka-bāri), to make them proofs to fire. This shows the existence of mud walls even in the rich man's houses. But as the terms 'Vaidyuta bhasma' and 'Karakabāri' are not clear, the mud used in plastering the walls must have been a specially prepared material, the nature of which is now unknown to us. A similar passage[59] occurs in the Matsya Puran (Ch. 219 V. 5-7) where the word 'Vaidyuta Bhasma,' is replaced by 'earth burnt by lightning'. This word in the Matsya Purana is therefore clearer than the term used in the Arthasastra. The word Karakabāri, however, is not found in the Matsya Purana and cannot be explained.

There were besides the king's quarters, a few structures in the fort, the nature of which cannot be clearly determined. They are a Simāgṛiha, two Pratimanchas, an Ani Harmya, an uttamāgāra, hidden walls, staircases and toranas. These structures probably stood on the skirts of the city by the side of the gateways under the city walls.

The treasury house which was also the model for the king's palace, consisted of an underground three-storeyed chamber coming upto the level of the ground and the main building, above the ground, covering the underground chamber inside it. The details of the construction are very interesting. A square pit was first dug into the earth, the sides and the bottom of which were then inlaid with thick slabs of stone. Inside the pit was there made, of substantial wood, a cage-like house of three storeys. It was provided with one door, and a staircase fitted with machines. Above this chamber was constructed, of bricks, the main treasury house (or a palace meant for the king's residence) closed on all sides and having a plinth (Vapra) and a 'grivā'. The use of these two words in their

(59) See Chart comparing Arthasastra with other Silpasastras.

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technical architectural senses thus, affords important conclusion about the antiquity of the 'Vāstuvidyā '.

The chambers for keeping articles of trade and produce of the fields were many-storeyed chatuḥsāla houses, having well-set rows of pillars of burnt bricks. The arsenal contained underground chambers and the prison house had secret chambers in it.

Thus the description of the fortified capital supplies us valuable information about the various kinds of structures of the period. The 'Indrakosha' towers, the underground chambers of the treasury-house or of a palace, the store houses and the like are a few examples of many-storeyed houses. The same fact is also evident from the expression 'Uttamāgāra' (Text p. 53, 216) which perhaps also means the upper storey of a building. The dimension of the tala or a storey is given as 15 cubits rising to 18 cubits with an increase of 1 cubit in each higher grade. (Text p. 53). The existence of the Harmya class of buildings is evident from the Pratoli, another harmya within the fort (Text Second Edition p. 53) and the one mentioned in connection with the Kumari's temple. The nature of the Harmya class of buildings is yet unknown. The Samarāngana Sutradhāra and Budddhaghosa (in his commentary on Cullavagga—see Chap. VIII) give one and the same meaning viz., a room on the upper storey, which seems to be applicable in the case of the Pratoli. The Mayamatam (Chap. 26) explains the word 'Harmya' in a sense with which the word 'Mundya harmya' (Text p. 54) in the Arthasastra may be compared[60].

An idea of the doors of the houses is afforded by the description of the doors of the underground palaces of the kings. They are said to have been carved over with the figures of Gods and of chaityas ("Āsanna Kāshṭhachaitya—

(60) The word 'Kumāripura' is just before the word Munda harmya. The word Munda associated with Harmya here indicates its shape as in the Mayamatam in "Mundākāram Sirsakam Harmyametat" (Mayamatam XIV. 100).

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devatāvidhānadvāram). Such decorations on door frames formed an important feature of Indian architecture, all the texts laying down the subjects to be figured on them.

Another class of door is called the "mundaka-dvāra", the meaning of which is not clear from the text. Torana and the Gopuram gateways have already been mentioned and perhaps refer to the boundary gate of a house. The door leafs were called 'Kavāṭayoga' or the 'Khandas' (Text p. 166), their joints the 'Sandhi' and the stands or the sills 'Vija'. The symbolical names given to the four principal city gates have already been mentioned and from the names it may be guessed that the figures of Brahmmā, Indra, Yama and Kārtikeya were carved over the northern, eastern, southern and the western doors respectively. The dimension of the door in the city wall is given in the Arthasastra. Their width might vary from 5 dandas (30 ft.) to 8 dandas (48 ft.) with an increase of 1 danda in each successive stage of the dimension. They were either square in shape (i. e., the height being equal to the width) or the height might be $\frac{1}{6}$ or $\frac{1}{8}$ times more than the width[61].

We get very little idea of the windows from the Arthasastra. The small and high windows of private houses have already been spoken of. A reference to the 'Jālavātāyana' (Text p. 216) however proves the existence of the latticed windows and shows the progress the Indians had made in the direction of window constructions.

The chatuḥsāla houses are often mentioned and this is the most characteristic type of ancient Indian buildings. The existence of 'Sabhā' classes of buildings is hinted at by a single reference to the word 'Sabhā'.

Pillars were called Stambha and Sthuna. The pillars in the store room, have already been mentioned, as being

([61]) I take this passage to refer to the dimension of the door and not as explained by Shamsastry (P. 53).
'Chaturarsa' should be taken in the sense here mentioned and the line should be read along with the preceding one.

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made of burnt bricks. Hollow pillars in palaces used as coverings of secret passages point to the consummate skill of the Indians in constructing pillars.

In book II. chap. 21, the relative dimensions of the different parts of a pillar have been stated. Three technical terms have been used there to indicate the different parts of a pillar. The lowest part called the 'Parikshepā' perhaps indicated the pedestal ; the part above it upto the capital was the Nikhāta and the capital was called the 'Chuli'. That these are the meanings of the terms used here may be inferred from a passage in the Mayamatam (Ch. 15.)[62]. The pedestal was $\frac{1}{6}$ the height, and the capital was $\frac{1}{4}$ the height[63]. The dimensions, however, are not clearly intelligible from the passage. Another pillared structure was the "Upasāla", or a small wall, which formed the enclosure round the outskirt of a village (III. 10).

It has already been mentioned that the gates of forts possessed either a draw bridge or a permanent one for entrance into or going out of it. Bridges were called Sankrama. Another word 'Setubandha' was used both in the sense of a bridge and the embankment of a river or a lake. Setubandha has been spoken of in one passage as one of the means of crossing the river. The word there clearly refers to a bridge. It also means a dam as is clear from the passage "The king shall construct the embankment (Vandhayet) of reservoirs (Setu), filled with water either natural or derived from some other sources." The Junagad Inscription of Rudradaman also contains this word (Setu) meaning an embankment. It was Chandragupta who first had the embankments of the Sudarsana Lake constructed by his governor of that province. The Arthasastra regulation referred to above was thus acted upon by the patron of Kautilya.

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(62) Mayamatam. See Table of comparison, Chap XI.

(63) This is what I take the passage to mean and the word 'nikhāta' cannot mean the "position dug into the ground".

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Religious edifices are but incidentally referred to in the Arthasastra. Hindu temples undoubtedly existed at that time; they were called 'Devakula' 'Devāyatana', 'Devatāgṛiha', 'Devagṛiha' etc. These words, however, do not give any definite information regarding the peculiar shape or form of the temples of that period. Inside the city were erected the abodes of gods such as Aparājita Jayanta, Siva, Vaisravana, Aswini etc. The Goddess 'Srimadirā' is an interesting reference. She has not yet been identified. But we find her mentioned in Mayamatam, Silparatna, Vaikhānasa Agama and Atri-Samhita (Ch. 11.4) (see Appendix Ch. XI). Temples were also erected for the gods of the site (Vāstu), as already mentioned. The words 'Mandira', 'Prāsāda' which in later times were used in the sense of temple (though Prāsāda' occurs meaning a palace) are not to be found in the Arthasastra, a fact which perhaps points to the antiquity of the Arthasastra civilisation. That some abodes of gods had an uttamāgāra (perhaps upper storey) is indicated by a passage (B XII. 5.)

The other two classes of religious structures were the Chaitya and the Stupa. Chaityas used to decorate the door-frames of the king's palace. Here Chaitya may mean an altar which is the original meaning of the word. In another place (XI. 1) a Chaitya is described as having doors ; where it might refer to a building of the Chaitya class of the Buddhists or a sacred tree which was often surrounded with a rail and a gate for entrance (Cf. Mahabharata XIII. 69). The exact nature of the Chaitya cannot therefore be ascertained from the Arthasastra which indicates it to be a Hindu structure. But in one passage the worship of Chaitya is mentioned (p. 256 trans). The Stupa refers undoubtedly to the famous structures so called, but there is no means to ascertain whether it was of the Buddhists, or of the Jains or of the Hindus.

The materials of ordinary buildings must have been wood as it is in India at the present time. The simplest kind of dwelling was constructed of screens of bamboo interwoven with

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reeds and straw and then plastered with clay, as the walls of the king's Antaḥpura have been mentioned to be. Roofs were often covered with mats. Timbers were also used in more ostentatious buildings. Its use may be inferred from many passages. Stone is mentioned to have been used in the sides of ditches and underground chambers and in the construction of the city wall. Buildings wholly made of stone are not elsewhere mentioned. Even the king's antaḥpura was not made of stone. The scarce use of stone in building points to the high antiquity of the traditions contained in the Arthasastra.

Bricks were, however, more extensively used. The side walls of some of the buildings within the forts are said to have been constructed of bricks; the treasury house and the palace over the underground chamber were 'aiṣṭaka' i. e., made of bricks. The banks of the ditches were also inlaid with brick and the city wall was wholly made of brick. In all the above instances there is no indication of the nature of the bricks used, whether they were sun-dried or kiln-burnt. In the construction of the storehouses, burnt bricks were used in the pillars. So we have reasons to infer that burnt bricks were used in other structures too.

It has been observed before that a great contrast between the condition of Pataliputra as described by Megasthenese and that described in the Arthasastra is afforded by the stone or brick-built walls of the city mentioned in the latter book. But we can reconcile the two accounts by reference to another passage of Megasthenese collected from Arrian's work, which states that "Cities on the banks of rivers and other low-lying spots were built of wood, those in more commanding situations, where they were less exposed to floods, of mud or brick (Arrian—McCrindle)". If what Arrian says be true, we can explain the Arthasastra passage as making a general statement (handed down as a tradition from earlier authors) which however was not applicable in case of Pataliputra which was on the Ganges and the Sone and so exposed to the floods. This

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apparent discrepancy therefore does not authorise us to draw any conclusion about the late date of the Arthasastra. Sir John Marshall while noting the above passage of Arrian interprets the bricks, there mentioned, as being sun-dried ones (Cambridge History Of India Vol. I.) which the text hardly warrants us to do. The references to bricks in the Arthasastra, therefore, cannot be taken as an evidence of discrepancy between Megasthenese and the Arthasastra.

The state of architecture described in the Arthasastra was highly advanced, which may be observed from great engineering skill as well as the artistic devices. It has also been shown on various grounds that the chapters describing architecture in the Arthasastra must have been taken from ancient texts on architecture, which points to the existence of a full-fledged science of architecture (Vāstu-vidyā) as early as the first century A. D.; even if not in the 4th century B. C. Frequent references to the artists and men trained in the fine arts (Kṛta Silpa), and the difference between kāru and silpa point to developed ideas of fine arts. The chapter on town-planning is a further proof of systematised study of these things in India. The units of measurement used in architecture, which is given in a table form, are exactly similar to those found in the other works on Silpasastra.

The scheme of town planning as given in the Arthasastra may next be considered. A Grama was 1 or 2 krosas in length. There were other kinds of settlements besides the Grāma or the city. In the centres of 800 villages was a Sthāniya, of 400 villages, a Dronamukha, of 200 villages, a Kharvatika and amongst 10 villages was a Sangrahana. These were undoubtedly various kinds of fortified places. The distinction between these kinds of fortifications is described in all later treatises on architecture. The Sthāniya forts could be circular, oblong or square in plan. The arrangement of the streets are fully described in Chapter 22 of Book II. The whole site was divided by three streets running eastwards

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and three towards the north. Each extremity of the streets was to have a gate thus making up twelve gates in all. The Rathya, the Rājamarga, and the roads in a Dronamukha, Sthāniya, a rāshtra or a pasture ground were to have a width of 4 Dandas or 24 ft. Streets for other purposes varied in their width, the lowest being 2 cubits and the highest 32. To avoid the congestion in the streets due to slow movements of animals, different roads were allotted for different purposes. Thus there were foot path for men, some for animals like cattle, some other for the lower animals, some for elephants and some for the chariots. There were Devapatha and 'Charyā' inside the wall of a fortified city. Another kind of road was the Mahāpatha. Thus five kinds of high roads are mentioned in the Arthasastra—the Rājapatha, the Devapatha, the Mahāpatha, the Rathya, and the Charyā. These kinds of streets are explained in many works on architecture. (For details of Town-planning—See B. Dutt's work)

The Arthasastra, like other Vastu works, gives detailed account of the position of the habitations of the various classes of people in the city. The palace was near to the centre facing to the north or the east. The centre was to be further enriched by the presence of several temples of the gods. Surrounding the palace were the houses of the Brahmins, the Kshatriyas, the Vaisyas and the Sudras occupying the north, the east, the south and the west part of the city respectively. The corners were set apart to the guilds ; and the intermediate portions contained the market, the houses of the royal priests and officers, of the artisans and so on. This sort of scheme found in many of the texts should be thorougly studied for a right interpretation of the excavated areas in India. The scheme found in the Arthasastra thus indicates the antiquity of the development of Indian Silpasastra.

The Arthasastra references to architecture are written in a style very similar to what we find in later works on Vastu. Several passages in the former may be compared

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with those in the latter ones. Moreover I have strong reasons to believe that the present edition of Kautilya's Arthasastra is a South Indian recension of the book as will be evident from the comparison in the next Chapter. Similarity of the Arthasastra Vastuvidya with the Mayamatam is remarkable. The parts of the pillars are named according to Dravida texts. The mention of 'Sri Madirā Gṛiham' which-cannot be explained in the Arthasastra, the Mayamatam and Silparatna is a further noticeable matter. The similarity of the other gods mentioned is also to be noticed[64]. Moreover the injunction in the Arthasastra that the height of the 'Prākarā' can be of both odd or even number of cubits is definitely rejected by the Samarangana, Sutradhara[65] which it did, perhaps because that was the opinion held by the Drāvida architects.

([64]) See Appendix to chapter XI.

([65]) Samarangana Sutradhara Ch. X. 28.

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CHAPTER X

The Earliest Writers Of The Vastusastra

(Upto 6th Cent. A. D.)

The foregoing chapters have revealed that at least from the time of the Grihyasutras a science of architecture arose in India called the 'Vāstu Vidyā' which was a part of the Silpa-sastra. This was intimately connected with the rituals and astronomy or astrology. But it had also a technical side. It has already been shown that the technical matters of Vāstu Vidyā began to develop even from the Vedic period ; and at the time of the Buddha, the Vāstu Vidyā had already developed in India. From that time till the 15th century innumerable writers on Vastu arose in India. Ram Raz first tried to find out the available works and he noted the names of no less than sixty-four sages or Indian writers on this subject. Many more works have since his time been discovered from which we may now try to find out the names of the early writers on this subject.

The Matsyapuran contains the names of 18 preceptors of Vastu who were reputed in the age when these chapters of the Purana were composed. The age of compilation of this chapter is however not definitely known. Until otherwise proved, we may accept the current theory that the Matsya-puran was completed just at the beginning of the Gupta period[66]. Thus we may start with that period and say that the writers on Vāstu Vidyā mentioned in the Matsya-puran flourished before the fourth century A. D. The Matsya Purana list[67] gives us the following names :—Bhṛigu, Atri, Vasishṭha, Viswakarmā, Maya, Nārada, Nagnajit, Visālāksha,

[66] See Appendix to this Chapter.

[67] Matsya Puran, Ch. 255 verses 4 ff.

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Purandara, Brahmmā, Kumāra, Nandîśa, Saunaka, Garga, Vāsudeva, Aniruddha, Sukra and Bṛihaspati. Besides these 18 teachers, the same chapter says that these matters were also related by Manu.

Many scholars think that the list is a mere traditional one and that the persons mentioned had not really written any work on Vāstu. The first reason for thinking this is that many of the names mentioned herein appear to be those of some Indian gods or traditional sages. Secondly, we have not got the works of these writers. Hence scholars refer to them as floating traditions. But I shall try to show below that both these objections are untenable.

Regarding the first objection, it may be said that names of Hindu gods are often given to human beings in India. This is a very common practice. Similarity of names, therefore, need not lead us to identify these writers on Vāstu with gods of those names. On the other hand, quotations from their works are found amply in such literature of late periods which indicates the real existence of these writers of architectural treatises. Brahmmā (with its synonym Pitāmaha) Nandisa or Saṁbhu, Vāsudeva and Kumāra need not necessarily refer to names of mythological gods. Sambhu is held as a great authority by the Visvakarma-prakāsa and the Mayamatam. A passage from a Sambhu's work has been quoted by a later work, the Vāsturatnāvali. Kumāra is regarded as an authority in the Silparatnam (under the name of Saḍānana). A book named Brahmma-Silpa is quoted in the Silpa-Samgraha (chapter XVIII). The Brahmmayāmala is referred to in the Visvakarmaprakāsa. Sakra (Another name of Indra) is held as an authority by Varahamihira and in the Sanatkumāra-Vāstu sāstra. The Silparatnam refers to him as Purandara as in the Matsyapurana. The Manasara and the Visvakarmā-Silpa refer to him as Indra. Bhaṭṭotpala actually quotes a verse from the work of a Sakra. He was perhaps

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a writer of the southern school. Vāsudeva need not refer to Kṛishna but to a disciple of Visvakarmā (see below), Visālāksha, which may mean a name of Siva, was also a person of that name. He is often referred to in Kautilya's Arthasastra. As the Arthasastras often included chapters on Vāstu, we may identify this Visālāksha of Kautilya's work with the writer on Vāstu Vidyā mentioned in the Matsyapurana. A 'Visāla' is referred to in the Manasara. We cannot say if Visāla may be identified with this author or a later writer. Writings of such other authorities may one day be discovered. There is, therefore, no ground for believing that these preceptors of Vāstuvidyā were merely fabulous gods to whom the origin of Vāstuvidyā in later periods was ascribed. The reason for doing this was that their original works were gradually lost and similarity of their names with those of gods led the later writers to think that they were gods. The name of Brahmmā was therefore mentioned later on as 'Pitāmaha' who was really a god.

Two such names, however, present a difficulty. They were Visvakarmā and Maya. Visvakarmā is known as the architect of the gods carrying out the orders of Indra. He is referred to as such in early literature, the Pali Jatakas, the Ramayana and the Mahabharata. Both these epics enumerate many of the deeds of Visvakarmā. Thus it is clear that there was a traditional Visvakarmā who was the architect of the gods. This, however, need not hinder us from believing that there was also really a man (or many men) called Visvakarmā who wrote works on architecture. The word Visvakarmā later on meant a good architect. We may believe therefore that in later periods many architects assumed the title of Visvakarmā. It was one of these later Visvakarmās who is mentioned in the Matsya Purana list as a preceptor of the Vāstuvidyā. This is evident from the fact that several works have been secured which are supposed to have been written by a Visvakarmā; and passages from such works are found quoted in later vāstu works.

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Who was Visvakarmā, the writer of the Vastusastra may also be known from the following discussions.

The Matsyapurana (chap. 5) mentions that Visvakarmā, the great architect was the son of Prabhāsa, one of the eight Vasus. This might have been the traditional Visvakarmā, the architect of the gods. But the extant work of Visvakarmā, the Visvakarmaprakāsa which appears to be a compilation of Vāsudeva, says that Visvakarmā was the disciple of Bṛihadratha who was the disciple of Parāsara[68] who again was the disciple of Garga who had as his preceptor Sambhu. Now, even if Sambhu be not regarded as a man (discussed above) there is no doubt that Garga, Parāsara and Vṛihadratha were real persons writing on Vāstuvidyā. About Garga and Parāsara we shall write more below. This is therefore clear that Visvakarmā was the writer of a Vāstu work and he was a disciple in the third generation of scholars of Garga. His views were put down in the Visvakarmaprakāsa by his disciple Vāsudeva. 'Vāsudeva' mentioned in the Matsyapurana list, therefore, need not be taken as the name of Krishna, but might refer to this writer of Vāstuvidyā of that name. So we find that there was a human being named Visvakarmā who might have been a real author of works on Vāstuvidyā. Now, as Visvakarmā was the name of the architect of the gods, we may assume that those men who later on assumed the name 'Visvakarmā' were people of Northern India, the home of the gods (see discussion about Maya below) and they wrote on architecture of Northern India, and represented the school favoured by the Aryans (the Visvakarmā school which was later on known as the Nāgara school—see ch. XXVIII). The Visvakarmaprakāsa is a work of the Northern school of architects, and so were those of Garga and Parasara. This Visvakarmā, the writer of Vāstuvidyā, has been mentioned in the Matsyapurana list, and in

(68) Bṛihatsamita also refers to Parasara as the preceptor of Vṛihadratha (ch. 61). Vis-Prakāsa ch. 1 and end.

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the Brihat Samhita; and quotations from his work have been found in the commentary to Bṛihat Samhita by Bhaṭṭotpala[69]. There being thus no doubt about a writer of Vāstuvidyā named Visvakarmā, we may also guess that he flourished after Garga but before the compilations of the Matsya Purana, and the Bṛihat Samhita. This will be further proved in the chapters on classifications of Indian temples.

But we find that several Vāstu works of the Deccan also take Visvakarmā as an ancient preceptor. Visvakarmā was thus the representative not only of the Northern school but also of the south. It might, however, be possible that there was another 'Visvakarmā' in the south. A Southern architect might choose to assume that name and might have written works on Vāstuvidyā. That it was so is evident from the fact that several extant works ascribed to Visvakarmā (the Viswakarmiya, Visvakarmā silpa etc.)[70] have been discovered in South India, which deal, I think, with architecture and sculpture of the Dravida land. This Visvakarmā was therefore a later one than Visvakarmā of the North. According to the Manasara, as noted by Ram Raz, there was a Viśvakarmā whose sons were Manu, Visvakarmā, Tvastār and Maya. This informs us of the existence of a house of famous architects; and besides the senior Visvakarmā, we find that all men of the family were regarded as great authorities on Vāstuvidyā by all the later writers of Vāstuvidyā, in the Deccan.

Of them, Manu and Maya are mentioned also in the Matsyapurana list. We may therefore take also this later Viswakarmā of the south as having lived before the age of compilation of the Matsyapurana. It is also possible, if the genealogy given above be regarded as merely a tradition, that when the early writers of Vāstuvidyā in the Deccan also followed the Northern authorities (see chapters on classifications of temples) they described their Visvakarmā and his

(69) Many of the passages ascribed to Visvakarma in these quotations have been discovered by me in the Visvakarmā prakāsa.

(70) Acharya—Indian architecture p. 96.

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brothers, as sons of Visvakarmā the senior, the North Indian writer, in order to show that Viswakarmā of the North was also a preceptor of their own. I also think that the writings of some of the North Indian architects were in a later age re-written in the Deccan (see next chapter) and hence the Visvakarma-prakāsa is different in character from the other works of Visvakarmā which have been discovered in the south.

Then about Maya. Maya is known as a Dānava and to have learnt the science of architecture from Sukra, the preceptor of the Dānavas. The Ramayana and the Mahabharata also describe the deeds of Maya. In the Ramayana, Maya's abode has been placed to the South of the Vindhyas. According to the Mahabharata he had erected a Sabhā north-east of the Kailāsa Mountain and another for the Pandavas[71]. Thus the traditional Maya, the Dānava architect was connected with the Non-aryan countries of India. He was, therefore, the representative of the South Indian architects. As the traditional Visvakarmā, the god architect, was recognised the ultimate authority by the North Indian writers on Vāstu, this Maya was done so by the South Indian people. Regarding 'Maya' also we may say that later writers on Vāstu in South India might have assumed that name, as has been said by Ram Raz. It was such a person named 'Maya' who wrote works on architecture of the southern school. He is mentioned in the Matsya Purana ; and the Bṛihatsamhita clearly refers to him as an astronomer and an architect, and that in such a way as to indicate that he belonged to a different school (the Drāviḍa school). There is a book called the Mayamatam and quotations from one of his works have been discovered in Bhaṭṭotpala's commentary on the Bṛihat Samhita, and in the Isānasiva-gurudeva-Paddhati. The Silparatnam also ascribes several opinions to Maya. Though I have not discovered Bhaṭṭotpala's quotation in the extant Mayamatam, the

(71) How a Drāvida writer could be connected with Northern-most parts of India will be made clear by the discussion about Nagnajit below.

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references in the I-S-G-Paddhati and the Silparatnam have been found out by me in the Mayamatam. Moreover I shall show below (ch. on classification) that the system followed by the Mayamatam is a very early one. I therefore agree with the learned editor of the Mayamatam who says that the Mayamatam is really one of the earliest works on South Indian architecture, earlier than the 11th century A. D. A fragmentary Mayasāstram, mentioned by Dr. P. Bose, refers to the Manasaram, Gārgeya, Dipta, Māricha, and Atriya Tantras. This Manasara may be an earlier Manasara mentioned in the published Manasara as an authority. Thus Maya also may be regarded as not only a traditional architect but also as a real person who wrote works on Vāstuvidyā of the southern school.

From these discussions about Viswakarmā and Maya we may also conclude that traditions and other facts clearly indicate the existence of two different schools of architicture in India, one most prevalent among the Drāviḍas and the other among the Aryans of the North, one recognising Maya and the other Visvakarmā as the ultimate authority. There were also persons of those names who were very early writers on Vāstuvidyā flourishing before the Matsyapurana and definitely before the 6th century A. D.

Now as to the other preceptors of Vāstuvidyā mentioned in the Matsya Purana. The Silparatnam refers to Bhṛigu and verses from his work are quoted in the Vāsturatnāvali (a late compilation). According to the author of the Visvakarmāsilpa, Visvakarmā learnt the science from Bhṛigu. This author Bhṛigu, however, was perhaps a writer on the Drāviḍa architecture, for he is regarded as an authority by writers of the southern school. He is not mentioned any where in the Bṛihat Samhita[72] though done so in the Matsya

(72) Though not mentioned, it however cannot really prove anything about Bhṛigu's date. We cannot say if his work was later than the Bṛihatsamhita which does not refer to all these writers or, as said elsewhere, Barahamihira's "manvādi" might have included Bhṛigu. More-

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Purana. The Silpasaṃgraha, a book of S. India ascribes its 6th chapter to Bhṛigu. The astrological book Bhṛigusamhita might have contained architectural matters. The published Atri Samhita (I. 40; II. 45) also acknowledges the authority of Bhṛigu. A work of Bhṛigu has been partly published in Telugu characters.

Atri, another sage, was the disciple of Garga as mentioned in the Bṛihat Samhita (ch. 46) and the Matsyapurana (ch. 229). Recently a book named Samurtārchanādhikarana or Atri Samhita has been discovered and edited, which contains several chapters on architecture and sculpture. The book belongs to the Vaikhānasa school of the Pancharātras. It is perhaps the work Ātreya referred to in the Agni Purana as a work of the Pancharātra School. But the book describes the architecture of the Deccan, as the names of temples in it indicate (See Table IC). It contains, however, old traditions regarding architecture, and agrees with the early Agamas, but is not referred to in South Indian works. Atri of the Bṛihat Samhita was a disciple of Garga and might be of the northern school. The Atri Samhita might therefore be a later Deccanese recension of Atri's work.

Vasishṭha has been found quoted in many places in the Vāsturatnāvali. One such quotation indicates that he was a later preceptor than Garga[73] and followed Garga. He is also quoted in the Jalāsayotsarga of Raghunandana. He was therefore a later Vasiṣṭha than one mentioned in the Rigveda as a brother of Māna[74].

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over if he was a writer of the South School, Bṛihat Samhita had no necessity of referring to his name.

But I have a strong suspicion that the Hayasirsapancharātram is perhaps a version of Bhṛigu. The last few verses are recited by Bhṛigu and refer to Markandeya. In that case there was a Bhṛigu even dealing with architecture of the Northern School.

([73]) Vāsturatnāvali p. 13

([74]) Vasiṣṭha's work was known also to Bhaṭṭotpala who explains Barahamihara's reference to "Manvādi" as "Manu-Vasishṭha-Maya-Nagnajitbhiḥ". Vasishṭha was also perhaps regarded as an authority of Drāviḍa Vāstuvidyā, as he is here mentioned along with other writers of the same school (See 'Manu' below).

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Nārada of the Matsyapurana might be the sage of that name referred to by Varahamihira (Bṛi. Samhita ch. 24) as a disciple of Bṛihashpati. He is also quoted by Raghunandana and in the Vāsturatnāvali. The Manasara also takes him to be an authority. The Chapter VIII of the Silpa Samgraha (a late South Indian Silpa work) is wholly ascribed to him. The next paragraph and his association with South Indian texts, as mentioned above, may indicate that he was an authority of the Dravida school of Vāstuvidyā. He might be the same Nārada who is known as the author of the Nārada Pancharātram.

Nagnajit of the Matsyapurana has been referred to by Varahamihira and found quoted in the Commentry of Bhaṭṭotpala (Ch. 58 of Bṛihat Samhita, 4 & 15). Varahamihira in quoting his opinion says that Nagnajit's school was the Dravidian school. This raises a very important problem. A Nagnajit, the king of Gandhara (and Kashmira) is mentioned in the Satapatha Brahmana (VIII. 1. 4. 10) in such a way as to indicate that he was an expert in building construction, and his opinion was rejected by that Brahmana because he was a 'Rājanya'. He was perhaps the same Nagnajit who according to the Aitareya Brahmana (VII. 34. 9) was a disciple of Narada, and according to the Mahabharata a disciple of Prahlāda. We have a Tibetan version of Chitralakshana of a Prahlāda and a Nagnajit. This Nagnajit is described in the Brahmanas and the Mahabharata as an Asura king of Gandhara. The discovery of the 'Chitralakshana' indicates that he was an architect associated with Prahlāda, another Asura King of Bahlika (Balkh). Late J. Ghosh has tried to prove[75] from these references that Nagnajit was an Asura king and the architect of an ancient Gandhara school of art. Several considerations,

([75]) Indian culture Vol VI. p 347—51.

If we assume the existence of an Asura or Dānava school of art in Gandhara known also as the Dravida school, it will prove that the terms Asura, Dānava and Dravida are identical. This will throw more light on the Indus valley culture than what Mr. Ghosh thought (See Chapters XXVII & XXVIII.

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however, have led me to think that Nagnajit of the Matsya-purana and the Bṛihat Samhita, who was a Dravida writer on architecture was the same as the king Nagnajit of Gandhara. According to traditions, Nagnajit was the disciple of Narada who, also, as I have shown above, was perhaps a writer of the Dravida school. The views of Varahamihira that Nagnajit was a Dravida may be reconciled with the traditions by assuming that a Dravida (Dānava or Asura) school of architecture also existed from a very early period in the Northernmost parts of India. This is further supported by the traditions that Maya, the Dānava architect and the greatest authority on Dravida architecture, though living in the South (Ramayana See Ch. V) erected the Sabha of the Pandavas from materials collected from a city near the Kailasa Mountain. Thus Maya, the Dravida architect, is also associated with the Northern part of India, as well as the regions of the Himalayas. So was Nagnajit, the King of Gandhara, really a Dravida architect of the North. The ancient Gandhara art of the Asura school assumed by Mr. Ghosh might therefore be also another branch of the Dravida school.

Saunaka's authority has been accepted by Raghunandana of Bengal and a Tantra work is ascribed to him in the Agni Purana. He is also mentioned by Varahamihira as an authority, in his Rājamārtanda Samgraha (Vide Des. Cat. of MSS. in Mithila Vol. III).

Garga was undoubtedly a very old writer on Vāstuvidyā and perhaps founder of the Nagara school. He was earlier than Visvakarmā, Vṛihadratha, Parāsara, Vasiṣṭha and Atri as already noted. His work was available to Varahamihira who summarised it in writing the chapters on Vāstu. Bhaṭṭotpala also quoted largely from Garga. In fact an astrological book called the Gārgi Samhita has been discovered, which might have been written not later than the first century A. D. The author of this Samhita might have been the same as Garga the great writer on Vāstu Vidyā, as there was a great relation between

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Vāstu Vidyā and Jyotisha Sāstra in India. The Visnu Purana (II. V. 26) reference to Garga's learning astronomy etc. from Sesa (who was a Naga) may place him in about 110 B. C. in which period Jayaswal places the Naga king of that name. A Vṛihadgarga is sometimes referred to in the Bṛihat Samhita and other works. It might be that there were two Gargas, the senior and the junior. Which of these was the author of Vāstu Vidyā cannot be definitely said. But the Vishnu Purana reference may place Garga in the end of 2nd century B. C. (See Chap. XXVI).

Aniruddha mentioned in the Matsyapurana has not been found mentioned anywhere else. Vṛihaspati was a teacher of Nārada (as noted above) and has been quoted by Bhaṭṭotpala. He was also regarded as an authority by Manasara. So he also was a South Indian writer and the preceptor of Narada, another Drāviḍa writer. Sukra is another puzzling authority mentioned in the Matsyapurana. The name was borne by the traditional preceptor of the Dānavas. He is called also Bhārgava indicating his relation with Bhṛigu who, as has already been mentioned, was perhaps an authority on Vāstuvidyā of the south. Both the Silparatnam and Visvakarmā Silpa (the southern work) refer to Sukra (or Bhārgava) as an ancient authority. According to the Ramayana, Maya received his knowledge from Sukra. Thus we may guess that the writer of Vāstuvidyā named Sukra was a writer of the Drāviḍa School. No work of Sukra, devoted entirely to architecture, has yet been discovered, but a compilation of his teachings under the name of Sukra Nîti contains some passages dealing with architecture of the South. In the Bṛihat Samhita (Ch. 86) he has been regarded as an authority by Varahamihira.

The actual quotations from their works (See Appendix B) may warrant us in concluding that these 18 teachers of Vāstu Vidyā mentioned in the Matsyapurana were not traditional authorities, but were real writers of works on Indian Vāstu Vidyā of both northern and southern schools, whose books

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though lost to us have been referred to by Varāhamihira (in the 6th century) and quoted by Bhattotpala and even later writers of the 15th century A. D. It was their works [76] which were consulted by the compiler of the Matsya Purane when he wrote the chapters on Vāstu Vidyā. They were also referred to by Varahamihira as 'Gargādi' in his chapters on Vāstu Vidyā. It is therefore that we find the similarity of the chapters on Vāstu Vidyā incorporated in the Matsyapurana with those in the Bṛihat Samhita. This was not due to floating traditions which were the common sources of those works, as Dr. Acharya thinks. That these writers lived before the 6th century is quite evident and they might have flourished even long before, as is apparent from the inclusion of their names in the Matsya Purana. The date of Garga is a landmark in Indian architecture (See Chap. XXVIII).

There were besides these 18, other early writers on Vāstu Vidyā who are not mentioned in the Matsyapurana but referred to in the Bṛihat Samhita. One of them was Manu. Varahamihira says [77] that Manu and others had written on Vāstu Vidyā in great detail and therefore Varahamihira could not write everything they had said. This Manu, though not mentioned in the Matsyapurana list, is referred to in the same chapter as an authority on Vāstu Sāstra (See f. n. 67 ante). There is nothing, however, to connect him with Manu the celebrated law giver. The Manasara and the Viswakarmā Silpa also refer to Manu as an early authority. He also therefore should be classed with the other eighteen teachers of Vāstu Vidyā [78] and perhaps was an authority of the Southern school as the genealogy, given by Ram Raz, of Visvakarmā and Maya indicates.

([76]) Though Mat. P. knew all the writings of both the schools, it included only the northern style when summarising these things.

([77]) Bṛihat Samhita 56.31.

([78]) References to Manu also indicate that he was a writer of the Drāviḍa School, or later on accepted as an authority by the Southern school, as Visvakarmā (See f. note on Vasishṭha above). The mention of Manu with Vasishṭha, Maya & Nagnajit perhaps indicates that all these were Dravida writers.

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Another famous writer was Parāsara. He is not mentioned in the Matsyapurana. But he is mentioned in the Bṛihat Samhita[79]. Moreover we know, as related before, that he was an earlier preceptor than Visvakarmā and was a disciple of Garga. Kautilya refers to a school of Parāsara (Arthasastra p. 398) He has been quoted by Bhaṭṭotpala in many places. Moreover, the southern works like the Manasara, the Silparatnam refer to him as a great authority, and the Isana-S—G—Paddhati quotes frequently from his work. As Parāsara is known to have been a disciple of Garga, he was perhaps a writer of the Northern school. But the fact of his being so highly regarded and quoted by Southern works raises the suspicion that Parasara's work like that of Viswakarmā and Atri was also rewritten in the South to suit the canons of South Indian architecture. Or there were two Parāsaras[80].

The same might also be said of another writer mentioned in many places in the Bṛihat Samhita and found frequently quoted by Bhaṭṭotpala. He was Kāsyapa. He is also regarded as a great authority in the Manasara and the Silparatnam. A chapter of the Silpa Samgraha (Ch. 3) is ascribed to him. Besides, we have got one Ms. of the work of a Kāsyapa—the Kasyapiya (In possession of Mr. O. C. Gangooly) and the Kāsyapasilpa and the Amsubedha of Kasyapa, (published in Anandasrama Sanskrit Series). The passages quoted by Bhaṭṭotpala indicate that he was a writer on North Indian Vāstuvidyā. But the available works appear to be quite different from the original work of Kasyapa and are undoubtedly works on South Indian architecture. The Atri Samhita (ch. 40) a South Indian work also acknowledges authority of Kasyapa. It is therefore that I think that the available works of Kāsyapa

(79) Bṛi. Sam Ch 61. Parasara's disciple was Vṛihadratha "Parāsara Prāha Vṛihadrathāya Golakshanam Yat" This is supported by the Visvakarmaprakāsa.

(80) The Isana—S—G—Paddhati contains innumerable passages quoted from Parasara's work, which has not yet been traced in original form.

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were later South Indian recensions of the famous original work of Kasyapa. From a rule in the Silparatnam that temples according to Kasyapa may be of 16 storeys, it may be inferred that the work utilised by the author of the Silparatnam was this later recension of Kasyapa's work which actually contains description of sixteen-storeyed temples[81]. That the Kasyapa Silpam was a later south Indian work is also apparent from the fact that according to earlier Southern texts, the number of storeys did not exceed twelve. Therefore whereas the South Indian works of Kasyapa were of a late period, there was undoubtedly an earlier work of Kasyapa which was the authority of Bhaṭṭotpala. According to a quotation of Kasyapa found in the commentary of Bhaṭṭotpala, Kāsyapa was a later authority than Viswakarmā[82]. As he is not mentioned also in the Matsyapurana, are we to guess that Kasyapa flourished in the period afer the Matsyapurana (4th century A.D.) and before the Bṛihat Samhita (6th cent. A.D.) (if we take the Matsya Purana list to be an exhaustive one) ?

The Bṛihat Samhita refers to a sage named Bharadwāja who is not mentioned in the Matsyapurana but is found quoted by Bhaṭṭotpala. He might or might not have, therefore, been a a contemporary of Kasyapa (i.e. after Matsya P. but before Bṛi. Sam).

Another ancient writer, not mentioned either in the Matsyapurana, Bṛihat Samhita or Bhaṭṭotpala's commentary was Agastya. He is regarded as a great authority by all the South Indian works[83]. A book called the Sakalādhikāra supposed to

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([81]) Silparatnam Chap. 37 "Ā Soḍasatalam Prāha Kāsyapo munisattamaḥ"

Acharya—Indian architecture p. 93 (no 41)).

Also see Chap. XVI.

([82]) Bhaṭṭotpala's commentary on Bṛi. Sam Ch. 56.

"Prāsādo Merusamjñaḥ Syannirddisto Visvakarmanā". Kasyapa is quoting here the opinion of Visvakarmā and so must be later than Visvakarmā.

([83]) Silparatnam, Visvakarmā Silpa, Silpa Samgraha etc.

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have been written by Agastya has been discovered. Though the MS. is fragmentary, I have no doubt that it is a South Indian work. So Agastya might have been really a writer on South Indian architecture. If 'Māna' was another name of Agastya (ch. II), we may take the Mānasara to be a later compilation of Agastya's work. This matter will be later on discussed in detail (Vide Ch. XVIII). The Manasara not only refers to Agastya as an authority but also contains iconography of the image of Agastya. Being a later work, it thus paid special respects to the sage Agastya and also refers to other summarised versions of Agastya's works e. g. Mānavid, Mānakalpa, Mānabodha and even another Mānasara. The compiler of this version of Agastya's work based his book on earlier summaries.

Another early author was Mārkandeya who recited the the Citralakshanam in the Visnudharmmottaram. He was also a writer on Vāstusāstra as is evident from the Ms. referred to by Dr. P. Bose (Principles of Indian Silpasastra p. 12 and Appendix p. 16). The Hayasirsapancharātra Ms. (V. R. Society, Rajshahi) also refers to this sage in the last verses. His authority as a Vāstusāstra writer therefore is obvious.

Thus there is no doubt that before the sixth century A.D. there were about 25 writers on Vāstuvidyā.

Some of them viz. 19 were existing before the 4th century A. D. if the Matsyapurana chapter be regarded as having been completed in that century. The date of the famous writer viz. Garga was between the second century B. C. and First century A. D. as already discussed. His preceptor was Sesanaga, another architect king. This Garga was followed by his disciples Parāsara, Vṛihadratha, Visvakarmā and Vāsudeva. Vasishṭha, Kāsyapa and Atri are also known to have lived after Garga or were his disciples. So we find that after the 2nd century B. C. there arose at least seven writers on Vāstu Vidyā, if not more. The earliest limit of the dates of the other authors is, however, difficult to find out.

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Besides the traditional Visvakarmā and Maya, who must have been the founders of Vāstu Vidyā in the earliest period, some eight other authors may also be regarded as living earlier than second century B. C. Nagnajit is known in the Brahmanas. Agastya is known as Māna in the Rigveda. Nārada is known as the preceptor of Nagnajit. Another author Prahlāda the preceptor of Nagnajit must have flourished before the Brahmana period. Bhṛigu and Sukra also must have been very early writers. So was Vṛihaspati who was a preceptor of Nārada. These eight authors might, therefore, have written their works before the historic period (6th century B. C.). Visālāksha might have flourished before the Arthasastra (i.e. at least before 1st century A. D.). Some of these 25 teachers were of the Visvakarmā school and others were of the school of Maya and Nagnajit i.e. the Drāviḍa school. The Nāgara school, a branch of the Visvakarmā school arose about the 2nd century B. C. and some of these writers might have represented the Naga school too.

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APPENDIX A.

The Visvakarmaprakāsa, Matsyapurana And The Brihat Samhita

In the foregoing pages I have assumed that the Visvakarmaprakāsa is the earliest of the known North Indian works on Vāstu Vidyā. But the matter deserves elaborate consideration. This can be done by comparing this work with the two other works with which it bears a very close resemblance, the Matsyapurana and the Bṛihat Samhitā, the dates of which are also more or less definitely known to us.

First, let us consider the date of the chapters on Vāstu Vidyā in the Matsyapurana. This Purana is generally believed to have been completed in the beginning of the Gupta period (4th century A. D.). It will also be shown that it contains the names of 20 kinds of temples, which is the earliest known classification of temples in India. The references to the prohibition of erection of stone houses (other than temples) in the Purana (See Ch. XXVIII) also indicate a very early stage of Indian architecture represented by it. These considerations may support the date generally ascribed to the Matsyapurana.

But there are several factors which may go against this theory. In describing the names of the temples, the Matsyapurana refers to certain names which are not found in the list in the Bṛihat Samhita. Thus in the Calcutta edition is mentioned a temple named 'Mṛigarāja', which is not found in the Bṛihat Samhita. Again, though the list in the Purana does not mention the temple called 'Sri-Vṛiksha', in the description of temples following, this temple has been described. Therefore the Matsyapurana chapter contains some self-contradictions.

Besides this, we find that the temples 'Sri-Vṛiksha' and 'Mṛigarāja' are two temples found in later texts. Thus the

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former one is mentioned in the Samarāngana-Sutradhāra and the Agni Purana lists of Nagara temples. Thus the Matsya-purana shows an acquaintance with a later stage of Indian architecture. This might be overlooked by saying that it was due to the oversight of the scribe of the manuscript, who was acquainted with both the earlier and later classifications of temples and confused the two in copying. But what is significant is that these apparent mistakes are found in the same form in also the later quotations from the Matsyapurana. The Samarāngana-Sutradhāra chapter on Nagara temples not only contains these later names (not unnaturally, as it is really a later work), but also the mistake in not naming the Sri-Vṛiksha temple but describing it in a following verse. The Sama-S. therefore appears to have been copying a confused version of the Matsyapurana.

Similarly the 'Haribhakti Vilāsa' a very late compilation of Bengal, in quoting the Matsyapurana verses on names of temples refers to the 'Mṛigarāja' temple. This confusion therefore is not due to the mistake of the scribe of the Ms., but must have originated in a very early period, in fact before the 10th century A D. (the date of the Samarāngana-S). In fact the Samarāngana further converts the name 'Sri-Vṛiksha' into 'Vāvṛiksha'—showing how this kind of classification of temple (Sri-Vṛiksha) mentioned in the Agni Purana etc. had arisen long before the 10th century (in which case only such confusion could have been possible). All these considerations show that the Matsyapurana text could not have been a copy of the Bṛihat Samhita, for, if it was so, there would not have been these mistakes in the Purana. Moreover, the 'Meru' temple is twelve-storeyed (and 32 cubits wide) according to the Bṛihat Samhita, but sixteen-storeyed and 50 cubits wide according to the Matsyapurana as well as the Visva-Karmaprakāsa. This may indicate that the Matsyapurana refers to a more developed stage of architecture than the Bṛihat Samhita. The Samar. S. reconciles both the sizes by saying

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that the Meru temple can be wide by from 32 cubits to 50 cubits. This later dimension of the Meru temple as described by the Matsyapurana and the Visvak. Prakāsa therefore arose before the 10th century and might not represent a later stage than that of the Bṛihat Samhita, but might arise from these texts being taken from a school different from that followed by the Bṛihat Samhita; or it might be that the Matsyapurana was written not long before the sources (e.g. Hayasirsa Pancharātra) of the Agni Puran, when both the classifications were known. A cause of these later matters being incorporated in the Mat. Purana and Visvak. Prakāsa was that these were later interpolations.

Then we may discuss the relation of the Visvak. Prakāsa with the Matsyapurana. The similarity of many of the verses in these works may lead any body to think that the one is indebted to the other. In fact the Matsyapurana really refers to the fact that these chapters were taken from earlier works. It names both Visvakarmā and Vāsudeva as two earlier authors. The Visvak. Prakāsa is a later compilation of Visvakarmā's work done by Vāsudeva. We therefore may presume that the Matsyapurana really copied from the work of Visvakarmā, and presumably from this compilation by Vāsudeva. The Visvak. Prakāsa also contains many confusions and they must have arisen in later periods. Thus we may conclude that the Visvak. Prakāsa is really an earlier work than the Matsyapurana and the Bṛihat Samhita. Bhaṭṭotpala quotes a work of Visvakarmā and many such passages have been found by me in the V. Prakāsa. But against this stands the opinion of Dr. Kern (J. R. A. S. vol VI) who finds out two verses in the Visvakarma Prakāsa in the Āryā metre (For the verse see Appendix chap. XIX) which are also found in the Bṛihat Samhita. As these are the only verses in Āryāmetre in the V. Prakāsa, he infers the indebtedness of V. Prakāsa to the Bṛihat Samhita. But as it has been shown that the Bṛihat Samhita itself was based on early

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writings (as Varahamihira himself says), it may be that both the Bṛihat Samhita, as well as the V. Prakāsa had taken this verse from a common source. The subjects dealt with in the Visvakarmaprakāsa in fact are more allied to those in the Matsyapurana than those in the Bṛihat Samhita from which the former differs in innumerable details. In fact it is strange to note that a later compilation called the Visvakarmavidyā-prakāsa is a verbatim reproduction of the Brihat Samhita chap. 53 with the addition of only a few new verses.

Though this compilation is certainly a very modern work, it is difficult to say if the author was here reproducing the Bṛihat Samhita chapter or was really quoting another work of Visvakarmā. The two verses in the Visvakarmaprakāsa, mentioned above, are also found in this book. It is quite possible, therefore, that Varahamihira really had taken this chapter from a work of Visvakarmā, of which the V. Prākasa is also a later compilation (of course earlier than the other work mentioned). Moreover, the V. Prakasa being an avowedly architectural work and having contained many more matters than what is included in the Bṛihat Samhita, it is not clear why the author of that work should take only those two verses in the Āryāmetre from the Bṛihatsamhita, while many other original works on architecture were available to this author, as they were to Varahamihira.

Moreover, it has been shown below (Ch. XIX Appendix D) that those two verses are very difficult ones and even Kern took them to be "too vague" ones. It is quite probable that even Varahamihira did not try to improve these verses, as he had done in many other cases. In fact there is nothing to show that the Visvakarmaprakāsa was a later work than Varahamihira's Bṛihatsamhita. On the other hand, the Visvakarmavidyāprakāsa rather points to the indebtedness of Varahamihira to the works of Visvakarmā. The later compiler, the author of Visva. K. Vidya Prakāsa could have summarised the Visvakarmaprakāsa—it

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cannot be understood, why in writing the Visvakarmavidyā, he took the whole thing from the Bṛihatsamhita. It is therefore quite likely that Varahamihira (as he himself says he was indebted to the works of older preceptors) had taken the verses from an earlier work—a work of Visvakarmā.

The similarity of these three works—the Matsyapurana, the Visva. Prakāsa and the Bṛihat Samhita therefore may lead us to conclude that Visvakarmā's works were earlier than the Matsyapurana which was again earlier than the Bṛihatsamhita and that both the Matsyapurana and the Bṛihatsamhita had been based on earlier works—the works of Visvakarmā, Garga and others who are mentioned in those works as their authorities. These earlier writings were not merely floating traditions, as Acharya believes, but were real works on Vāstu Vidyā, the existence of which in a very early period has been shown in the previous chapters.

APPENDIX B.

Authors mentioned in the Matsya Purana	Passages from their works quoted in	Cited as authorities in
*1. Bhṛigu	(a) Vāsturatnāvali pp. 7, 52, 64 (b) Silpasamgraha Ch. VI (c) Hayasir sapancharātra (V. R. S. MS).	(a) Silparatna (b) Visvakarmā-Silpa (c) Atri Samhita (d) Vāsturatnāvali p. 52
*2. Atri	...	Bṛihat Samhita
3. Vasishṭha	(a) Raghunandana's Vāstuyāgatattva p. 25. (b) Vāsturatnāvali pp. 7, 10, 13, 40, 44, 59.71, 72, 81, 93, 98	...
*4. Visvakarmā	Bhaṭṭotpala (Bṛihatsam. chap. 52. verses 40-41, 73, 75-76, 122 (Found in Visvakarmaprakāsa)	...

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Authors mentioned in the Matsya-Purana	Passages from their works quoted in	Cited as authorities in
*5. Maya	(a) Bhaṭṭotpala (Br. Sam. ch. 52. 40-41) (b) Isānasiva-Gurudeva-Paddhati (c) Silparatnam	Bṛihat Samhita
6. Nārada	(a) Maṭha Pratishṭhā of Raghunandana refers to Narada Pancharātra (b) Silpa Samgraha ch. 8 (c) Vāsturatnāvali pp. 15, 41, 44, 71, 90, 92, 98	...
*7. Nagnajit	Bhaṭṭotpala ch. 58 verses 4 and 15	...
8. Visālāksha	...	(a) Arthasastra (b) Manasara (?)
9. Purandara or Sakra	Bhaṭṭotpala verses 40-41	(a) Bṛihat Samhita (b) Manasara (c) Silparatna etc.
10. Brahmmā	(a) Brahmmasilpa quoted in Silpa-Samgraha (ch. 18) (b) Brahmmayāmala quoted in Silpasamgraha ch. 19 (c) Pitāmaha quoted in Isana-S-G-D-Paddhati III. 30·20.	Many books
11. Kumāra	...	Silparatna
12. Nadisa (Sambhu)	Vāsturatnāvali p. 51, 86	...
13. Saunaka	Raghunandana's Jalāsayotsarga p. 11	(a) Agni Purana, (b) Rājamārtanda Samgraha of Varahamihira
14. Garga	Bhaṭṭotpala ch. 52, verses 16, 23, 31, 32, 33, 34, 35, 73, 74, 83, 93, 94-5, 107, 110	(a) Bṛihat Samhita (b) Visvakarmaprakāsa (c) Sanat Kumara Visvakarma Prakāsa
15. Vāsudeva	...	...
16. Aniruddha	...	...
*17. Sukra	...	(a) Silparatna (b) Visvakarmāsilpa (c) Bṛihat Samhita
18. Vṛihaspati	Bhaṭṭotpala ch. 52 V. 2-3 and 87-88	(a) Bṛihat Samhita (b) Manasara
19. Manu	...	(a) Bṛihat Samhita (b) Manasara (c) Visvakarmāsilpa

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Authors *not* mentioned in Matsyapurana but in Bṛihat Samhita	Quotations from them found in :—	Cited as authorities in :—
20. Parāsara	Bhaṭṭotpala ch. 52. 49-50 and 91. Isanasivaguru—Paddhati	(a) Visvakarma Prakāsa (b) Manasara (c) Silparatna
*21. Kāsyapa	Bhaṭṭotpala ch. 52. 4 and 11; ch. 55	(a) Manasara (b) Silparatna (c) Atri Samhita
22. Bharadvāja	Bhaṭṭotpala ch. 52. 75-76	...
Other early authors		
*23. Prahlāda	...	...
*24. Agastya	...	(a) Silparatna (b) Manasara
*25. Mārkandeya		(a) Hayasirsa Pancharātra (MS). (b) Visnudharmmottara

*Books are found ascribed to such marked authors.

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CHAPTER XI

Earliest Nature of Vastusāstra upto the 1st Century A. D.

The Architectural canons of ancient India were best known to the mason architects and were of use to them only. The lay people naturally were less acquainted with them. But a time came when many scholars wrote on Architecture and were famous in society as the preceptors of the Vāstu-vidyā. Gradually, however, the educated community began to neglect the study of this science and the Mss. were being carelessly preserved or were totally neglected. This accounts not only for the very fragmentary character in which most of the earliest works have been handed down to posterity but also for the many mistakes of the scribe of later ages, evidently due to their unacquaintance with the real objects indicated by the technical terms. An attempt may be possible to find out the scope and the different stages of the development of the Vāstu-vidyā.

Before Ram Raz, Indian Vāstu-vidyā, to the scholars, meant only several canons dealing with the religious rites to be performed on the occasion of building a house and a few astrological data for calculating the best time for house-building. These portions of the Vāstu-vidyā were incorporated in the Puranas, Tantras, Agamas and other works on ceremonial rites and astronomy or astrology. These have therefore been better preserved than the main topics of the Vāstu-vidyā dealing with the technical aspects of the subject. But there can be no doubt that the Vāstu-vidyā was formerly recognised as one of the technical subjects along with the Āyurveda (Science of Medicine), Dhanurveda (Science of war), Astronomy and the like. Although this science finds no specific mention either in the

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list of fourteen or the eighteen Vidyās, yet, as precepts about the Vāstu are found incorporated in Jyotish and Purana both of which are recognised as branches of learning or Vidyā, Vāstu may be recognised as one of the Vidyās. The author of the Sukranitisara clearly recognises Silpasāstra as one of the thirtytwo Vidyās enumerated in it (Chapter 4. 3. 29).[84] Silpasāstra as a whole was also taught in the Nalanda University (vide account of Yuan Chwang),

The Vāstu-vidyā was a branch of the more comprehensive Silpasāstra; but gradually the two became identical. Vāstu-vidyā means the science dealing with Vāstu. The word "Vāstu" is of unknown antiquity and occurs in the Rigveda in the sense of the building site or the building itself, Vāstu-vidyā therefore primarily meant the science of Architecture. Later on, however, many other subjects were incorporated in it. Thus Vāstu in the sense of a place where men dwell, according to the author of the Mayamatam, included not only building-site and Prāsādas or temples and palaces but also conveyances and couches. The Silpasāstra which included the Vāstu-vidyā is defined in the Sukraniti as a science dealing with public works such as temples, images of gods, gardens, houses, and tanks. It was exactly these subjects that are found discussed in the later Vāstu-sāstras. Silpasāstra and Vāstu-vidyā were thus identified with each other.

We shall now try to present an idea of the nature of the Vāstu-vidyā as it existed in the early times and how it developed in later periods.

When the Vāstu-vidyā first originated cannot be definitely ascertained. Its origin should be considered apart from that of Indian architecture. The opinion held by scholars that the Vāstuvidyā originated in the period of decadence of Indian architecture cannot be supported. Some of the extant treatises might have been late works, but the Vāstuvidyā in

(84) The Kāmasutra refers to Vāstuvidyā as one of the 64 Vidyās.

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some form must have existed in the earliest known periods of Indian history. We have already discussed in previous chapters (I to IX) the nature of Indian architecture as it existed from the Rigvedic period to the time of the Arthasastra or the time of the Buddha. We have already indicated in those chapters that we can trace the existence of the Vāstuvidyā even in those early periods. Here we give our conclusions from those chapters regarding the actual nature of the Vāstuvidyā of those early periods.

In the Rigvedic period, a ceremonial was performed at the time of building a house. A god named Vāstospati was worshipped on that occasion. He was later on in the Veda identified with Indra and Tvastṛin. From these references we may conclude that house building was already associated with religion. The ceremony performed was enjoined in all later works on Vāstuvidyā and the same Vedic Mantra is still cited. Tvastṛin later on became a traditional (or real) authority on Vāstuvidyā to the writers of the South Indian school. During this ceremony, the house itself, the door and the posts are also to be worshipped. This system also was enjoined in all later Silpasastras.

A system of selection of the sites, a favourable site being sloping to the east, had also grown up. This site selection forms important chapters in all later works on Vāstuvidyā. A system of measurement to be followed in construction of various articles was also existing in this period.

We then come to a very interesting matter. In the Rigveda, all strong cities (purs) or houses (Harmmya) have been shown to have been connected with the Asuras. It has been shown by late J. C. Ghosh that Nagnajit, the architect king of Gandhara and Kashmir might have been living in the Rig-Vedic period. (Indian Culture Vol. VI) and he was perhaps an Asuric or Asura king. In later periods (of Varahamihira) there was known a writer of Vāstuvidyā named

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Nagnajit belonging to the Drāviḍa school. Now if these two persons are identified, we find that in the Rigvedic period, there was an Asura king named Nagnajit who was an architect of the Drāviḍa school. This is significant from the fact that besides Nagnajit, we have already found another architect, Tvastṛin in the Rigveda who was also regarded later on as an authority of the Drāviḍa school. This is further supported by the occurrence of the name of 'Māna' in the Rigveda which refers to the sage Agastya, another traditional authority of the writers on Vāstuvidyā of the Drāviḍa school. The existence of the Asura architecture and names of sages famous in traditions in the Vāstuvidyā of the Drāviḍa school may warrant us in coming to the conclusion that even in the Rigvedic period, a system of Vāstuvidyā arose in India which was different from that of the Aryans and which was Drāviḍa or Asura in character. We shall show later on that from a very early period there were really in India two schools of Vastuvidyā, the Central Indian (called the North Indian order or Nāgara) and the South Indian (or in the Vedic period it might have existed in the Gandhara, Kashmir and North-Eastern India) called the Drāviḍa or Asura school. The existence of the Drāviḍa school of Vāstuvidyā in the Rigvedic period, therefore, may be inferred from these evidences.

From all these discussions we may conclude that in the Rigvedic period a Vāstuvidyā had been created which dealt with the selection of sites, worship of the God of Vāstu and the house, the doors and the posts; and that the Drāviḍa school of Vāstuvidyā also existed.

In the later vedic periods the symbolical interpretations of structures, as found in later Silpasāstras, had already developed. The various parts of a pillar were regarded as representing various matters, as already mentioned. The mystic element in Indian Vāstuvidyā may thus be traced in the vedic period.

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The Brahmanas, however, inform us many other aspects of the Vāstuvidyā. The word 'Silpa' is found in the Brahmanas, which included sculpture, singing, dancing and music. These matters were later on inseparably connected with the Vāstuvidyā.

Moreover, what has been said about the Asura or Drāviḍa Vāstuvidyā in the Rigvedic period is further confirmed by the Brahmanas. The Satapatha Brahmana rejects the opinion of Nagnajit of Gandhara as he was a Rājanya (or Asura king). (See Chapter XXVII). The Aitareya Brahmana mentions the sage Nārada as being a teacher of that Nagnajit. Now this Nārada (along with Nagnajit)is also regarded as a great authority by the writers on Drāviḍa Vāstuvidyā. The existence of the Drāviḍa Vāstuvidyā in the Rigvedic period is thus confirmed by the Brahmanas. This may further be proved from the chapters on the construction of the 'Smasāna' (Burial mounds) found in the Satapatha Brahmana. It is said therein (Vide Ch. III) that the Aryas build there mounds without any base under them and in the shape of a square, whereas the Asuras, the Easterners and others build them round and with bases. This also clearly proves the existence of the Asura school of architecture in the Brahmana period, as in the Rigvedic period, and that the Asura School may be identifed with the Drāviḍa School.

It is in the Sutra period that we meet with the earliest form of the Vāstuvidyā in a definite form. The Sānkhāyana Gṛihya Sutra describes in two chapters the ceremonies that are to be performed at the time of house building. The Āsvalayana Gṛ. Sutra contains three chapters, which deal with, besides ceremonials, the examination and selection of the sites and the soil. It also contains the regulations to the effect that the soils of respective colours and tastes are to be assigned to the respective castes, a principle followed by all the later works on Vāstu, not only in this matter but also in allocation of sites to the different castes in a city or village,

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or of respective kinds of houses for the respective castes.

Regulations for the position of the doors of a house are also found in the Gobhila and Khādira Gṛ. Sutras. This matter is also found described in all later works on Vāstuvidyā.

The position of trees to be planted around a house and prohibition of plantation of several trees therein are also found in the Gṛihyasutras as in later Silpasāstras. Symbolisms connected with architecture are also met with in the Sānkhayana Gṛ. Sutra. With this is connected also the principle laid down that different positions of the doors are the cause of different kinds of benefit or injury to the master of the house. Auspicious moments for the construction of structures are mentioned in the Pāraskara and the Hiranyakesi Gṛ. Sutras. It was thus that the Vāstuvidyā gradually became inseparably related to astrology as we find in later periods.

In the Sutra period therefore we find the earliest form of the Vāstuvidyā. All the principles followed in later Silpa works had developed. The technical side of the Vāstuvidyā however cannot be ascertained from the Sutras, except from the regulations regarding the construction of Yupas, fire-altars and burial mounds (containing of course only the bones and ashes of the dead).

When we come to the two great Epics (the exact dates of which are, however, unknown; though, I have shown, that the descriptions therein are undoubtedly of a very early age, and similar to those of the Pali Jatakas), we find the existence of the fully developed Vāstuvidyā, with its religious and technical sides.

The Ramayana refers to the experts in Sthāpatya (architecture) which presumes their knowledge in the Vāstuvidyā. The ceremonies performed at the time of building a house have also been mentioned. The Mahabharata also refers to the Vāstuvidyā directly and also to the ceremonies. The auspicious days of house building are also referred to in the Mahabharata.

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All the matters discussed in Gṛihyasutras, therefore, may be supposed to have existed at the time of the epics. Besides this we find reference to Vādhas or obstructions to buildings as discussed in later Silpasāstras. The references to the two great traditional architects—Visvakarmā of Gods (Aryans) and Maya (of the Drāviḍas) are found in both the Epics. The Mahabharata further informs that Raja Nagnajit was a disciple of the Asura kings Prahlād of Bahlika (who is perhaps also known as the composer of a work called 'Chitra Lakshana found in Tibet). The Harivamsa further informs that he took the side of Jarāsandha (who was brought up by the Rākshasi Jarā) of Magadha in a fight with Kṛishna. This also connects him with the non-Aryans. If Nagnajit of the Mahabharata be identical with the architect king of Gandhara of that name, reference to Nagnajit and Maya in the Mahabharata indicates the existence of the Asura or Drāviḍa school of architecture and Vāstuvidyā also in the time of the Epics. The existence of Maya in the Khāndava forest and his building the Sabhā of the Pandavas and his knowledge of a city near the Kailasa can thus be explained by assuming the existence of the Drāviḍa School of architecture in the northernmost part of India, as already discussed before.

Besides these matters, it is in the Epics that we find the existence of the technical aspects of the Vāstuvidyā. The Ramayana refers to the various kinds of architects whose services are also required in a house construction according to the Silpasāstras. They are the sthapati, Vardhaki, Takshaka and Sutradhāra. Houses of different kinds are mentioned in the Epics e. g. Prāsāda, Saudha, Vimāna, Harmmya, Sabhā and the like. Though later lexicographers took all these to refer to a building, the later Silpasāstras and perhaps also the Epics distinguished each of these from one another according to difference in their characteristics. This is apparent from the fact that whenever a prāsāda is described it is said to have contained many storeys, which is really the meaning of the

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word 'Prāsāda' according to later Silpa texts[85]. The word 'Bhumi' meaning a storey is found in the Silpasāstras. Besides these various types of buildings, houses, with technical names similar to those found in the works on Vāstuvidyā, are also mentioned in both the Epics. The Ramayana refers to the Padma, Svastika, Vardhamāna houses and a Vimāna called 'Pushpaka'. The Mahabharata mentions houses of Svastika, Vardhamāna, and Nandyāvarta types, seats called Pushpaka and Sarvatobhadra and a sabhā called 'Toranasphāṭika'. The different kinds of houses and Sabhā described in the Epics are similar to those in the works on Vāstuvidyā. Construction of royal seats and those of gods also were matters discussed in the Vāstusāstras. The six kinds of forts described in the Mahabharata are also described in later Silpasāstras. The towns described in the Ramayana and the Mahabharata were well planned with various kinds of roads such as Mahārathyas, Mahāpathas etc. and present a picture similar to those described in the chapters on town planning found in the later works on Vāstuvidyā.

Two more references in the Ramayana are interesting. The Ramayana in one place refers to the existence of doors with figures of Lakshmi on them. This kind of Lakshmi is not only found on Indian doors but is also enjoined to be placed on doors in the Indian Vāstuvidyā. Similarly a house is described whose length was twice the breadth. This proportion between the length and the breadth of a house is also directed to be observed by the Vāstusāstra. Thus the two Epics clearly indicates the existence of the Vāstusāstras with its ceremonials and technical matters which formed the subject matter of all later works.

The condition of the Vāstuvidyā, as we may guess from the Epics, is almost similar to that presented by the Jataka stories and the Buddhist canons. From these two sources therefore we shall be able to know the state of Vāstuvidyā of a more

(85) Silparatna recommends that a Prāsāda can have 3 to 12 storeys.

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definitely known period i.e. of about the time of the birth of the Buddha and after his death. The existence at that time of the Vāstuvidyā and experts (Ācharyas in that Vidyā) are mentioned both in the Jatakas and the Pali canons. Reference has been made to the ceremonials connected with house building as 'Pāsādamangalam in the Jatakas as in the Mahabharata. The attribute 'pariyadāta silpam' given to a carpenter (associated with erection of a house) indicates that house building was now recognised as a 'Silpa'. The careful selection of wood for house building is indirectly referred to in the Jataka stories. Reference to the Vāstuvidyā in the pali canon[86] indicates that, at the time of the Buddha, the Brahmins, the educated community, had already secured a knowledge of the Vāstuvidyā. The ceremonials found in the Silpaworks and the site selection and collection of wood which formed part of the Vāstuvidyā were thus known to the Vāstu works of the time of the Buddha.

But the Jatakas and the Pali canons contain more references to the technical side of the Vāstuvidyā than what we have found in the earlier works. The distinction made in later Vāstu works between various kinds of houses is also found in the Pali works. The canons refer to such houses as Vihara, Mandapa, Addhayoga, Prāsāda, Harmmya, and Guhā and their distinctive features have already been discussed (Ch. VIII). The Jatakas also refer to Prāsādas, and they, as in the epics, always had many storeys (or Bhumis). Technical names of buildings or roads found in later works are also mentioned in the Jatakas, such as, the Kokanāda nāma Prāsāda, Pupphaka Prāsāda and the Utpalavithi.

Besides this, various mouldings associated with various structures are also mentioned in the Pali works, as found in later works. These were the 'Padmaka' moulding of a pillar, Oṭṭha and Grivā of a pinnacle, Bhittipāda, Vatthuka (basement), Gopānasi and the like, terms very familiar to the later

(86) Vide Ch. VIII above.

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treatises on architecture. The upper part of the door was called Udumbara and other parts of a door were called Pṛishtha Samghāta and Pāsaka. Stairs had an 'Ālambana', Vāhana, Suchiya and Ushnisha. Subsidiary structures are also mentioned; such as the Hatthinakha, Bhitti (walls), Alindaka, Uparipāsāda, Kannika with a Thupa, a window called Simhapanjara, Garbha gṛiha of various kinds and Koshṭhaka and the like. This indicates the growth of technical words which were later on known to the treatises on architecture, but the meanings of which were unknown even to the lexicographers of the later periods. The measurements, Kukku (Kishku) and Vidatthi (Vitasti), were, as in later periods, known to the Jataka stories. Windows of three kinds have been mentioned in the Pali canons. Besides this we learn of the existence of a kind of plaster, over which the frescoes were to be painted, made of some paste of a tree or the like and may be compared to the Kalka mentioned in later works on Vāstuvidyā[87].

Thus by the time of the Buddha and even before him the intricate matters of the Vāstusāstra may be supposed to have been fully developed. The Vāstursāstra was a branch of study and we may therefrom infer the existence of a large number of writers on Vāstuvidyā.

Lastly we may know the condition of the Vāstuvidyā from the Kautilya's Arthasastra which could not have been composed after the First century A.D.[88], if not in the 4th century B.C. It will therefore be the state of Vāstuvidyā in the period between the birth of the Buddha and the almost definitely known date of the Vāstu works (1st Century A. D.), which, or quotations from which, have come down to us, i.e. the date of the writers who have been mentioned in the Matsyapurana and the Bṛihat Samhita. In fact, the discussions on Vāstuvidyā of the time of the Buddha and the Arthasastra may indicate that

(87) Mayamatam, Silparatnam etc.
(88) H. C. Roy Chowdhury—Political History of India.

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many works on Vāstu might have been written long before the first century A. D. i. e. the period when the Arthasastra was composed. (Whatever might have been the date of the Arthasastra, as this book was undoubtedly based on earlier works, its author had learnt also the matters regarding architecture from earlier writers on Vāstuvidyā). The date of Garga mentioned before may take the date of that earlier period to the 2nd century B. C.

It has been shown in the chapter on Kautilya's Arthasastra, that the author has defined 'Vāstu' in the sense in which writers on Vāstuvidyā took it. The undefined phrase Vāstukaprasastadesa' indicates that the people of that time were well acquainted with the lands (as defined in the Vāstusāstra) fit for building purposes. The words 'Vāstu Hṛidaya,' 'Navabhāge', 'Vāstudevatās' and 'Koshṭhaka', I have shown, cannot be understood without reference to the elaborate ceremonials and the division of the foundation into 81 or 64 Pādas as precribed in the Vāstusāstras (i e. the Vāstu Mandala). The difference between 'Kāru' and 'Silpa' was also apparent at that time.

The construction of the Antaḥpura with its face to the north or the east indicates the existence of rules regulating the placing of doors. Different kinds of buildings, Prāsāda, Harmmya and Sabhā, different kinds of roads in a city, and various kinds of Durgas discussed in the Arthasastra clearly indicate the knowledge of intricate differences of these constructions. The symbolical interpretation of Indian architecture was also known, as is evident from the names of gates according to those of gods, Brahmmā, Indra, Yama and Senāpati. The technical words used in Vāstusāstras are also mentioned ; such as, Kapisîrsa, Indrakosha, Hastinakha, Tala, Kapāṭayoga, Sandhi, Khandas, Vija and the names of the different parts of a pillar. Structures of intricate construction like Gopuram, Torana, Pratoli, Indrakosha also indicate the existence of the names found in the

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Vāstusāstras. The units of measurement used in treatises on architecture are known to the Arthasastra. The technical words such as Vishkambha and Āyāma (width), Ucchraya (height) and Asri (the sides or corners) indicate great acquaintance with the works on Vāstu.

The acquaintance of the Arthasastras with various injunctions of the Vāstusāstras may also be inferred. Thus the height of the wall is laid down as twice its breadth ; the depth of the ditches is to be regulated ; and dimensions of the doors, its height and width were fixed as according to injunctions of the Vāstusāstras. Doors were coverd with figures of gods and Chaityas. The mention of two mixtures, Vaidyutabhashma and Karakabāri, which made structures fire-proof is interesting and this is found also in the Matsyapurana.

The system of town-planning by assigning different classes of people to different parts of a city is similar to that found in the Vāstusāstras. The rules regarding constructions of roads also presuppose the existense of such rules of the Vāstusāstras at the time of the Arthasastra. Kautilya refers to a school of Parāsara and Visālāksha who might be writers of Arthasastra as well as Vāstuvidyā, as many other writers of Arthasastra are mentioned also as writers on Vāstu (E. G. Usanas, Vṛihaspati).

Last of all, by comparing the language used in the Arthasastra chapters on architecture with that of the Vāstu works, we cannot but conclude that the author of the Arthasastra was summarising in a Sutra form the injunctions which he found in the works on architecture existing in his time. This will be shown in a chart form below. I have strong reasons to believe, as will be evident from the chart, that the Arthasastra chapters on Vāstu were taken from Drāviḍa Vāstuvidyā the existence of which I have traced from the Brahmana period, if not the Vedic.

From these discussions in this chapter we may infer that by the time of the Buddha and 1st cent. A.D. and even long earlier,

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the Indian Vāstuvidyā had fully developed. Many writers on Vāstuvidyā had already been born and had written their works. The technical and religious sides of the Vāstuvidyā had grown up, and it was a science well studied by the educated community. We may also infer that two schools of such Vāstuvidyā were coming down from a very early period and works of both the schools had already been written by the preceptors of Vāstu. It was these works and perhaps also some later writers who are mentioned in the Matsyapurana. These were later on incorporated in the Puranas, Agamas and Tantras, summarised in works of compilations and astrological treatises, and only a few of them have come down to our times, some perhaps not in the original form but as recensions, or as Ghosh says, "recensions of recensions."

APPENDIX C

1. Arthasāstra P. 40—

   मानुषेनाग्निना त्रिरपसव्यं परिगतमन्तःपुरमग्निरन्यो न दहति

   Cf. Matsya Purana Ch. 219. 5.

   गृहे त्रिरपसव्यन्तु क्रियते यत्र पार्थिव
   नान्योऽग्निर्ज्ज्वलते तत्र नात्र कार्या विचारणा ॥

2. Arthasastra.

   वैद्युतेन भस्मना मृत्संयुक्तेन करकवारिणा अवलिप्तं च

   Cf. Matsya Purāna.

   सामुद्रसैन्धवयवा विद्युद्दग्धा च मृत्तिका
   तयानुलिप्तं यद्वेश्म नाग्निना दह्यते नृप ॥

3. Arthasāstra P. 51—वास्तुकप्रशस्तदेश

   Cf. Bṛihat Samhita Ch. 56. 9 :—

   ता एव तेषां शस्यन्ते देवतायतनेष्वपि ।

4. Arthasastra P. 51.

   ऊर्ध्वचयं मञ्चपृष्ठं कुम्भकुक्षिकं वा हस्तिभिर्गोभिश्च क्षुण्णं

   Cf. Samarāngana Ch. 10. verse 19, cf. f.n. No. 48 above.

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5. Arthasastra

वप्रस्योपरि प्राकारं विष्कम्भद्विगुणोत्सेधमैष्टकं
द्वादशहस्तादूर्ध्वमोजं युग्मं वा आ चतुर्विंशतिहस्तादिति कारयेत् ।

Cf. Samarāngan Ch. X verse 25-26.

वप्रोर्ध्वभागगं मध्यं स्थूलोपलशिलाचितम् ।
कुर्यात् प्राकारमुद्दामं यद्वा पक्केष्टकामयम् ॥
ज्यायान् करैर्द्वादशभिर्देशभिर्मध्यमः स्थितः
कनीयानष्टभिर्हस्तैर्विस्तारः स्यात् त्रिधेत्यसौ ॥

Cf. Mayamatam Ch. X. 44.

प्राकाराश्चेष्टकया द्वादशहस्तोच्छ्रिताहीनाः

6. द्वादश हस्तात् ऊर्ध्वमोजं युग्मंवा आ चतुर्विंशति हस्तात् (Artha Sastra)

Samarangana Sutradhara—

प्राकारोच्छ्रयमिच्छन्ति नापि युग्मकरोन्मितम् (Chapter X Verse 28)

7. Artha Sastra—(Page 55)

आपराजिताप्रतिहतजयन्तवैजयन्तकोष्ठकान् शिववैश्रवणाश्विश्रीमदिरा-गृहं च पुरमध्ये कारयेत् । कोष्ठकालयेषु यथोद्देशं वास्तुदेवताः स्थापयेत् ।

Mayamatam Ch. X. Verse 49-50.

इन्द्रश्चवासुदेवो गुहो जयन्तश्च वैश्रवणः
अश्विन्यौ श्रीमदिरे शिवश्च दुर्गा सरस्वती चेति ।

Atri Samhita XI. 41

तथा न्यच्चं सुरादेवीं श्रियं च हरिरच्चकम् ॥

(Cf. Vaikhānasāgama Patala VII)

Silpa Ratna V. 14½—15½.

इन्द्रश्च वासुदेवो गुहो जयन्तश्च वैश्रवणः ॥
अश्विन्यौ श्रीमन्दिरशिवौ च दुर्गा सरस्वती ॥

8. Artha Sastra Page 55.

चातुर्वर्ण्यसमाजीवे वास्तुहृदयादुत्तरे नवभागे यथोक्तविधानमन्तःपुरम्···

Brihat Samhita Ch. 53. 46.

मध्येब्रह्मा नवकोष्ठकाधिपो

Brihat Samhita 53. 54.

हृदये ब्रह्मा

Mayamatam Ch. VII. 54.

वास्तुमध्ये तु मर्म्माणि ब्रह्मा हृदयमुच्यते

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CHAPTER XII

Development of Vāstuvidyā from First to Sixth Century A. D.

In the last Chapter it has been shown that the Vāstuvidyā in some form had been coming down in India from the Vedic period. We have traced its nature from the earliest period to the First century A. D. (the latest possible date of the Arthasastra). Many of the earliest writers on Vāstuvidyā (mentioned in Chapter X) might have flourished in this period. Garga and his disciples perhaps flourished before the First century A. D. But unfortunately we have not got the works of the earliest Vāstusāstra writers. Fragments of their works have been, as has already been said, found quoted in later writings. In trying to know the nature of the Vāstuvidyā in this period, therefore, we shall have to collect the materials from those fragments. We shall then compare these materials with what we know of the Vāstuvidyā from the earliest available works on Vāstu.

Here we give below in a tabular form all those matters on Vāstuvidyā which we have gathered from the previous Chapters (II to IX)

1. Ceremonials connected with house-building called 'Vāstu Karma' 'Vāstumangala' ; Vāstuhoma ; 'Vāstusamana' in the Gṛihyasutras, Pali works and the Epics.

2. Selection of sites called Vāstu Parikshā' in the Gṛihya sutras.

3. Selection of soils—included in 'Vāstu Parikshā' in the Gṛihya sutras.

4. Soils of different quality, shape, colour, taste meant for different castes—discussed in the 'selection of soil' in the Gṛihyasutras.

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5. Regulations regarding position of doors and posts—discussed in 'Vāstu Parikshā' chapter in the Gṛihya sutras, and also the Arthasastra.

6. Regulations regarding plantation of trees ;—discussed in Gṛihya sutra.

7. Collection of wood—inferred from references in the Arthasastra.

8. Division of the site into various Padas or Koshṭhakas each with a presiding deity—connected with the ceremonials and inferred from references in the Arthasastra. Its existence is recorded in the Gṛihyasutra Parisishṭas and may be inferred from the Mantras and references mentioned in the Gṛihyasutras themselves.

9. Relation of Vāstuvidyā with astrology—auspicious moments of house-building—discussed in the Gṛihya Sutras and referred to in the Epics.

10. Different results accruing from constructions of different kinds—discussed in Khādira Gṛihya Sutra (IV. 2. 14-15).

11. Symbolical interpretations—mentioned in the Gṛihya Sutras and the Arthasastra.

These matters are more or less connected with religious matters and covered with a mysticism which pervades all the spheres of activities of the Indians. Actual architectural matters were also undoubtedly discussed in the earliest treatises on Indian architecture, as will be evident from the matters discussed below in continuation of the above.

12. Vāstuvidyā was a part of the Silpasāstra and connected with sculptures, painting, dancing and music—this is known from the later Vedas, Arthasastra regulations regarding decorations to be placed on doors and references in the Pali Jatakas and Epics to sculptures and paintings on houses,

13. Different kinds of houses—Prāsāda, Vimāna, Harmmya, Sabhā, Mandapa, Sālā—having different characteristics—

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discussed in Pali canons and referred to in the Vedas, the Jatakas, the Epics and the Arthasastra.

14. Classification of structures such as buildings, pillars gates and roads in a city with technical names—referred to in the Epics and Jatakas.

15. Calculation of cardinal points—supposed from references in the Gṛihya Sutras and the Arthasastra.

16. Units of measurements—known to the Jatakas and the Arthasastra, besides the Epics and the Sulvasutras.

17. Regulations prescribing different proportions to be followed regarding height, breadth, length, thickness and the like of various structures—Found in the Jatakas, Arthasastra, Sulva Sutras etc.

18. Materials to be used—lime or white wash, plasters on walls for paintings, preparations for making structures fire proof and stable (the Vajralepa,) wood, bricks and stones—discussed in Sulva Sutras, Grihya Sutras, Pali canons, and Arthasastra.

19. Town-planning—inferred from the Epics, and Jatakas and discussed in the Arthasastra.

20. Classification of forts—rules of their construction—descriptions in the Epics, Jatakas, Arthasastra.

21. Assignment of different sites in a city to different kinds of people—discussed in the Arthasastra.

22. Rules regarding private houses—Ekasāla, Dvi-sāla and Chatuḥ Sāla Gṛihas—references in the Gṛihya Sutras, Epics, Jatakas and the like.

23. Technical terms of different kinds of mouldings—found in the Jatakas, Pali canons and the Arthasastra.

26. Two different schools of Vāstuvidyā—of the Devas (Aryans) and Asuras (Dravidians)—Names of traditional architects, Visvakarmā, Tvastār, Maya, Prahlāda and Nagnajit—and sages like Vṛihaspati, Nārada,—references found in the Rigveda, Brahmanas, Epics. The Arthasastra perhaps belonged to the Drāviḍa school.

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24. Temples have been referred to, but the word 'Mandira' is not mentiond.

25. Many-storeyed buildings—referred doubtfully in Rigveda and mentioned in Pali Jatakas and canons, Epics and Arthasastra.

These twenty six important matters regarding Vāstuvidyā were thus known to the Indians from a very early period till the 1st century A. D. That there were authors on Vāstuvidyā in this period is therefore quite evident. The Chapter X on 'the earliest writers on Vāstusāstra' has, however, shown that before the 4th century A. D., there must have been in India a large number of authors on Vāstu works, many of which are lost to us, but quotations from them prove, beyond doubt, their existence. These quotations will therefore indicate the nature of the Vāstuvidyā from the 1st century A. D. to the 4th century of which no available works on Vāstu has yet been procured.

The following table shows that the 26 matters discussed in the foregoing pages were also the topics dealt with in the works on Vāstuvidyā, quotations from which are available to us.

No.	Subject matters	Names of authors, referred to in quotations, who dealt with matters here discussed :—
1.	Vāstupurusha	Vṛihaspati.
2—4.	Examination of soil and sites.	Garga, Nārada, Bhṛigu, Vasishṭha.
5.	Position of Doors.	Garga, Nandi, Visvakarmā, Bharadwāja, (Yama), Vṛihaspati.
6.	Plantation of trees.	Garga, Vṛihaspati.
7.	Collection of wood.	...
8.	Vāstu Padas	Parāsara, (Bharata), Visvakarmā
9.	Vastuvidyâ & astrology.	Garga.

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No.	Subject matters	Name of authors referred to in quotations who deal with matters here discussed :—
10.	Results of constructions.	Garga, (Kiranatantra), Nārada.
11.	Symbolical interpretation.	Garga.
12.	Sculpture or Iconography.	Nagnajit, Maya.
13--14.	Different kinds of houses	Garga, (Kiranatantra), Visvakarmā.
15.	Sanku	...
16.	Units of Measurement	Visvakarmā
17.	Proportion of different structures.	Visvakarmā, Garga, (Kirana Tantra).
18.	Materials Stone.	Kiranatantra. Visvakarmā and (Hiranyagarbha)
19-22.	Private houses.	Garga, (Kāsyapa), (Kiranatantra.), Vṛihaspati.
23.	Mouldings	(Kiranatantra), (Kāsyapa), etc.
24-25.	Temples.	(Kāsyapa), Visvakarmā, Maya, Manu etc.
26.	Different schools.	This is not, however, definitely known from the quotations.

In this table the age of the authors or works put in brackets is unknown (they might not have existed before the 6th or 7th centurty), but they were undoubtedly early authors whose works are now lost to us.

The matters referred to above may be regarded to have been the principal subjects discussed in the works on Vāstu-vidyā which are now lost to us. We shall show first that almost all these matters are found dealt with in the earliest

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available texts—the Visvakarmaprakāsa, Matsya purana, and the Bṛihat Samhita[90].

1. Ceremonials—Vis. Prs. Chapter 1, verses 93-100 Mat, Purana—Ch. 252-253.

Brit. Samhita—53. 125-26. (Not being a religious book it does not give details of ceremonies.) In these books too they are called Vastupujā, Vastupasamana.

2-4. Selection of sites and soils—V. P. I. 24-71; M. P. 253 11-18. B. S. 53. 91-96.

5. Position of doors—V. P. II; M. P. 254. 1-14 ; 255. 7-18. B. S. 53. 70-81.

6. Plantation of trees—V. P. VII. 106.; M. P. 255. 20-24.; B. S. 53. 83-88.

7. Collection of wood—called 'Dāru Āharana' V. P. IX; M. P. 257; B S. 120-123.

8. Division of sites into 64 or 81 Padas—V. P. I. 5-23; M. P. 253. 19-48; B. S. 53. 2-3, 41-56.

9. Vāstuvidyā and astrology—V. P. II 1-87 ; III. 83. M. P. 253. 1-9; B. S. 53, 101-111.

10. Results of various kinds of constructions—V. P. I. 40-60, II. 103 ff, VI. 1-10 and VII; M. P. 254. 4-14; B. S. 53. 33-41.

11. Symbolical interpretations—they are not mentioned in one place in any text book ; but all the rules point to some symbolism. The various mystic figures according to which plans are to be made (e. g. Sarvatobhadra, Nandyāvarta, Vardhamāna and Svastika) and names of pillars (Mat. P. 255. 8-9) indicate that structures had always some symbolism behind it.

12. Vāstuvidyā's relations with Silpasāstra, sculpture, painting, music—

The Visvakarmaprakāsa besides dealing with architecture also contains chapters on :—Size of the Linga and Piṭha,

(90) I shall henceforth give initials of the works referred to here; for Viswakarma Prakasa—V. P., Matsyapurana—M. P. and Bṛihat Samhita—B. S.

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excavation of tanks, wells, planting of gardens, construction of bedsteads and cradles which are included in Silpasāstras. Besides these, it enjoins various kinds of sculptures to be engraved on doors etc. which indicates Vāstuvidya's relation with sculpture. Chapters on painting have not been found in the extant text. The Tibetan version of Chitra-Lakshana of Visvakarmā might contain the chapters on painting composed by Viswakarmā. Visvakarmā's writing on iconography and iconometry might have survived in the South in the other works attributed to Visvakarmā, as referred to in Acharya's book (p. 98-99).

That Visvakarmā's work or other works written in the period under discussion also dealt with iconography is evident from chapters on iconography found in the Matsyapurana (ch. 258-261) and in the Bṛihat Samhita (chapters 59-60) immediately after the chapters on Vāstuvidyā. The Matsya Purana and Bṛihat Samhita, however, being not primarily Vāstu Sāstra, did not refer to the science of painting. We do not find any reference to music and singing in the available texts of this period; but in the Vāstu works of the South it is stated that an architect must also have knowledge of these two branches of fine arts. Moreover, in later Vastusastras, of the Northern school too, the various 'rasas' are enjoined to be depicted in sculptures on buildings. The depiction of various "Rasas" prescribed and figures of dancing and musical parties actually found on temples of later periods indicate that architecture was inseparably bound with dancing and music. References to these things in later śilpa works may point to its existence even in earlier periods (cf. Nagnajit's work 'Chitra Lakshanam').

13-14. Different kinds of Houses and and other structures —and their classifications :—V. P. II 103-124 ; II—153-197 ; 299-325, IV—13-20. M. P. 254—1-38, 270-1 ff.; B. S. 53. 31-41; Classfications of buildings and temples are discussed in a separate chapter.

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15. Calculation of cardinal points—

The extant texts know how to do it by placing the 'Samku'. This is found in :—V. P. IV.—45-46 ; VII, 51-55.

The Matsya Purana and the Bṛihat Samhita do not refer to the 'Samku' but contain detailed instructions regarding the directions occupied by different structures. The existence of a system may thus be presupposed. Moreover, the Bṛihat Samhita, an astronomical work, must have known something regarding this matter.

16. Units of measurement.—V. P. IV. 37-40. M. P.—References to Ratni, Angula, Hasta, Kara in chapters on Vāstu ; and to these units in Ch. 258. 17-19. B. S.—58. 1-2.

17. Proportions of different structures.

This matter is found in all these works regarding different parts of a structure, like the length and breadth of the temples, king's houses, houses of Brahmins and other castes and of doors; regarding proportion between the different parts of a pillar, or of a temple or the like. This matter is in fact the most important thing and the essential matter in all treatises on architecture of this and later periods. This therefore need not be discussed in details here. References to these may be found out throughout all the books under discussion.

18. Materials—'Dāruāharana' chapter has been already mentioned. For other materials V. P. VI. 12—32 (stones used). M. P. 54. 41, 169, 47 (stone and brick temples) ; B. S. 53. 23. Fire-proof materials—M. P. Vajralepa—Bṛihat Samhita (taken from Maya).

19-21. Town planning, forts and different sites for different men :—V. P. XI (taken from Brahmayāmala) M.P. 217. 1-19½, 254. 14-34. B. S. 52. 4-19 ; (only deals with sizes of houses of kings, commanders, ministers, queens, princes etc.)

22. Private houses of sālā type;—V. P. II—102, 128; M.P. 254. 1-13; B. S. 53. 32-41.

23. Technical terms of mouldings etc. :—

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Of Pillars—V.P. II. 168-169; M.P. 255, 5-6. B.S. 53. 29-30.

Of doors—V. P. II. 163-164 etc; M. P. 270. 19½-20½ B. S. 53. 26-27.

Of temples—V. P. VI, M. P. 269, B. S. 56.

24-25. Temples and their classifications—see 'mouldings of temples' above. The 'Bhumis' (storeys) on the temples, are mentioned and the word 'Prāsāda' has been used to refer to a 'temple'—which could have 12 storeys according to the Bṛihat Samhita; but 16 storeys according to the Matsya Purana and Visvakarma Prakāśa; but the reading in the latter works appear to be mistaken or later interpolations (see Appendix A). Besides these, see chapter on "Age of the classification of temples".

26. Different schools of Vāstuvidyā :—

The Visvakarmaprakāsa, as the name indicates, was a work ascribed to Visvakarmā, the traditional architect of the gods. We may suppose, therefore, that it belonged to the school of North Indian architects. As shown before (Ch. on 'Teachers of Vāstuvidyā') the available book is a later recension, written by Vāsudeva, of the actual work of a Visvakarmā. As both Visvakarmā and Vāsudeva are mentioned as preceptors of Vāstuvidyā in the Matsyapurana, I take this work to be earlier than the Matsyapurana. Both these works agree in many respects and the similarity is so great, that the indebtedness of the one to the other is obvious. The Visvakarmaprakāsa also mentions as earlier authorities the names of Garga, Parāsara, Vṛihadratha, Visvakarmā. We may, therefore, take these authors as belonging to the school of Visvakarmā (North School). The quotations from Garga's work found in the commentary of Bhaṭṭotpala are also exactly similar to those found in the Matsyapurana and the Bṛihat Samhita. Garga, therefore, undoubtedly belonged to the school to which Visvakarmā, Vāsudeva, the author of the Matsyapurana and Varahamihira belonged. Varahamihira also acknowledged his debt to Visvakarmā, Gargādi and 'Manvādi, preceptors like Garga, Manu etc. Thus, we may guess the existence of

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a school of Visvakarmâ or the Northern School before the Matsyapurana.

Neither the Visva-Prakasā nor the Matsyapurana and the Bṛihat Samhita refer to the Nagara school of Vāstuvidyā. Dr. Jayaswal thinks that the Nagara school arose in the time of the Bharasiva Nagas i.e. about 2nd century A.D. and that the Agni Purana first refers to the Nagara school. Regarding the first point, more will be discussed in a later chapter (See Ch. XXVIII). But it must be mentioned here that though the Matsyapurana does not refer to the Nagara school, the architecture dealt with therein cannot but be that of the Nagara school. This is evident from the fact that the names of temples in the Matsyapurana and their characteristics are referred to in the Samarāngana Sutradhāra as those of the Nagara temples. Thus the absence of the name 'Nagara' in the above works does not prove that the Nagara school developed after the Matsyapurana or the Bṛihat Samhita. It was in fact a later development of the Visvakarmā school as will be shown later on (Ch. XXVIII).

The Visvakarmaprakāsa does not refer to the school of Maya (the Southern school), the traditional architect of the Dānavas (Dravidians). The work 'Mayamatam' ascribed to him (as discussed before), however, indicates the existence of a writer of Vāstuvidyā named Maya, though the extant work might be a later recension. That such a work existed is known from the name of Maya included in the list of preceptors in the Matsyapurana. The Bṛihat Samhita also refers to a work of Maya with which Varahamihira disagreed in some matters (ch. 56. 29), ostensibly because Varahamihira was following the school of Visvakarmā ; though regarding the preparation of the Vajralepa, Varahamihira acknowledges his debt to Maya (Ch. 57). Thus Maya's school was different in many respects from the school of Visvakarmā. The Bṛihat Samhita therefore clearly refers to the Drāviḍa school of architects and their writings on Vāstuvidyā. This is further proved by the refer-

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ences in the Bṛihat Samhita to Nagnajit, another Drāviḍa writer, whom we have already discussed before. Thus the earliest available works on Vāstu clearly indicate the existence of two schools of writers on Vāstuvidyā in India before the Matsyapurana and the Bṛihat Samhita—the Drāviḍa and the Visvakarmā school, later on known as the Nāgara school.

In the foregoing pages, therefore, I have submitted strong reasons for believing that from the time of the Arthasastra or that of the Buddha, till the time of the Matsyapurana and the Bṛihat Samhita (i. e. from the 6th cent. B. C. to the Gupta period, approximately 6th cent A. D.) there were in India innumerable works on Vāstuvidyā. The matters dealt with in these works were similar, on one hand, with those found in pre-Buddhistic literature, and on the other hand, with those found in the works of the later periods. These works are known from the Matsyapurana and the Bṛihat Samhita, from several extant works (which, however, might be their later recensions) and also from quotations from them found in the later works. Though they are now lost to us, we may guess what matters they dealt with. Some of them might have existed in some form even before the Buddha. We further know that during this period the Drāviḍa school also produced many works on Vāstuvidyā. It was these works which were taught in the Nalanda University in the 7th century A. D. It was on the basis of these Vāstu works that all the available texts on this subject were written. The matters discussed in these chapters are also to be found in all later works dealing with Vāstuvidyā (see comparison by Acharya pp. 89-120).

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CHAPTER XIII

Development of Vāstuvidyā from the 6th Century

We have already traced the development of the Vāstuvidyā upto the time of the Bṛihat Samhita. We have shown that very few of the works written before the Matsyapurana have survived upto our times. The Matsyapurana contains a a mere summary, and being a religious work cannot be expected to inform us all matters contained in those early works. The Bṛihat Samhita was also an astronomical work and, as the author himself says, he only gives a gist of the writings of his predecessors. The Visvakarmaprakāsa was also not the original work of the great author of that name. We may, therefore, conclude that from this period, the Vāstuvidyā was incorporated in a summarised form in many religious works. Construction of a house being connected with religious matters, such rules had to be studied by the priests and hence, even upto the present day, we find such chapters on Vāstu in many works connected with religion. Besides the Matsyapurana, we find another religious work the 'Kiranatantra', a tantric book, being quoted by the commentator of Bṛihat Samhita (Bhaṭṭotpala). These quotations, which refer to matters similar to those included in the Bṛihat Samhita, indicate that this work contained matters on architecture of the Northern school. We may thus conclude that many of the Tantra works of Northern India incorporated matters of Vāstuvidyā (see also below). Similarly in South India, many subjects relating to Vāstuvidyā were incorporated in the Āgama works. The Dipta Tantra (Ms), however, appears to be a South Indian work. Many of the original works on Vāstuvidyā must have survived long after the Matsyapurana and the Bṛihat Samhita. This is

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evident from the innumerable works quoted by the commentator of the Bṛihat Samhita viz. Bhaṭṭotpala. His date is generally believed to be 965-67 A. D. but according to Mr. D. C. Bhattacharya, (Ind. Culture 1945) he lived in about 857 A. D. Thus these works were available till the 9th or the 10th century A. D.

In North India, moreover, after the Matsyapurana, other Puranas also began to incorporate the matters on Vāstuvidyā. Hence it is that we find such chapters in the Agni Purana, the Garuḍa Purana, the Devi Purana, and the Bhavishya Purana. These works, therefore, give an idea of the Vāstuvidyā of a later period. Similarly the Agamas contain the Vāstuvidyā of the Drāviḍa School. It is not, however, certain that all these Puranas and the Agamas were later than the Sixth century A. D. On the other hand, it will be shown below that the Vāstuvidyā in some of the Agamas has greater relation to that of North India than to that of the South, and hence might contain traditions of the pre-sixth century A. D. (Because after the 6th century we notice a great difference between the works of the Northern and those of the Drāviḍa School).

Along with the incorporation of Vāstuvidyā in the religious books, the original treatises on architecture also, however, continued to be studied in both North and South India; as the result of which we have got several later works on Vāstuvidyā. With the growth of Indian architecture, many new schools of architecture arose ; such as the Lâta, the Vairāṭa (or Vavāṭa), the Bhumija, Kalinga and Andhra and perhaps also the Vesara school. Though they were perhaps mere ramifications of the Nāgara and the Drāviḍa schools, we may presume that works were produced by also the architects of those schools for the guidance of the builders in those styles. Some of these works also we may find summarised in the Puranas, Tantras, and Agamas. But, that original works dealing with technical architectural matters were also written is

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evident from some of the later extant works (Samarāngana Sutradhāra, Bhuvana-Pradîpa, Silparatnam, Mandana's works, Manasara etc.)

The Agni Purana contains several chapters on Vāstuvidyā which are also exactly copied in the Garuḍa Purana. Moreover the book Hayasirsapancharatram, (Saurakānda and also perhaps other kāndas), though a religious work contains several chapters on Vāstuvidyā. I have strong reasons to believe that it was either from some common source, another work on Vastuvidya, that both the Hayasi-Pan. R. and the two Puranas, mentioned above, have taken their materials, or the Puranas directly copied from the Pancharatra treatise. That the last is the possibility is evident from the fact that Chapters 39 and 42 of the Agni Purana (dealing with Vāstuvidyā) are said to have been related by 'Hayagrîva' or 'Hayasîrsa.' The chapter 39 says that these matters were related before in 25 works of the Pancharātra or the Saptarātra school viz., (1) Hayasîrsa Tantra, (2) Trailokyamohana Tantra, (3) Vaibhava T. (4) Paushkara, T. (5) Prāhlāda T. (6) Gārgya T. (7) Gālava T. (8) Nāradiya T. (9) Samprasna (10) Sāndilya (11) Vaisvaka (12) Sātya T. (13) Saunaka (14) Vāsisṭha (15) Jñānasāgara, (16) Svāyambhuva, (17) Kāpila, (18) Tārkshya (19) Nārāyanika, (20) Ātreya, (21) Nârasimha, (22) Ānanda, (23) Āruna, (24) Baudhāyana, (25) Ārsha Tantras.

Now I have no doubt that though these works are mentioned here as Tantras, their names indicate that some of these were the works of authors who are also known as famous writers on Vāstuvidyā.

Of them, we already know the following to be works or authors of the Vāstuvidyā :—

(1) Hayasîrśa Pancharātra.
(2) Prahlāda
(3) Garga.
(4) Nārada. (A 'Nārada Pancharātra' is available.)
(5) Visva or Visvaka (Manasara refers to three works

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as Visvasāra, Visvabodha, Visva-kāsyapa ; and the Silpasaṃgraha also refers to the Visvasāra).

(6) Saunaka. (7) Vasiṣṭha.

(8) Kapila-Pancharātra is quoted in the Vîramitrodaya.

(9) Atri (The recently discovered book 'Atri Samhita' is a book of the Pancharatra school and contains reference to South Indian architecture).

We may thus conclude that the Agni Purana chapters on architectural matters were based on earlier works. The Hayasirsa, the first mentioned author, must here refer to the writer of the Hayasirsa Pancharātram. There is thus no doubt that the Agni Purana (also perhaps the Garuḍa Purana) was based on the Hayasirsa Pancharatram. In fact, the Agni Puran architecture is wholly similar to that described in the Manuscript of the Hayasirsa in the Varendra Research Society Museum at Rajshahi. The classification of temples into 45 kinds (Vairājādi) is exactly similar in the Hayasirsa, Agni Purana and the Garuḍa Purana. Scholars like H. P. Sastri, P. V. Kane and R. C. Hazra (Ind. His. Quarterly 1936 p. 683 ff.) have assigned the present Agni Purana between 800 and 900 A. D. The Hayasirsa Pancharatram therefore must have been composed after the sixth and before the ninth century A. D. That the Hayasirsa Pancharatram was composed before the 10th century A. D. is also apparent from the fact that while the number of Vairājādi temples is sixtyfour according to the Samarāngana, it is fortyfive according to the former work.

Besides the Hayasirsapancharatram, the Agni Purana further shows that before the ninth century, architectural matters had been incorporated in many works of the Pancharatra or Saptaratra school and also in the Puranas. Out of the 25 works on Tantra mentioned in the Agni Purana, some are known to us from the Matsyapurana. But there are some other works which are not well known to us. Some of them might have been earlier or later than the Matsyapurana. Thus the Nārāyanika mentioned above might be the work of

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Nārāyana who is mentioned in the Vishnudharmmottaram as the creator of paintings. Another Nārayana is known as the author of the Tantrasamuccaya, a very late south Indian work, to whom perhaps, chap. IX in the Silpasamgraha has been ascribed (Acharya-Indian Architecture p. 108). The Paushkara Tantra was perhaps the work of the same Pushkara who is said to have related the chapters 217 to 237 of the Agni Purana itself (dealing with matters of Arthasastra).

In fact, the Hayasirsa-Pancharatra and the Agni Purana indicate that at a certain time, Vāstuvidyā became incorporated in the works of the Pancharatra school, as it was also inserted into many of the Puranas. When the Tantras of the Pancharatra school arose is difficult to surmise. The learned editor of the Atri Samhita has said that the Pancharatra school is a very early one; but it is very difficult to prove whether the Tantras of this school, as they are found today, are earlier or later than the 4th century A. D. Some of these works dealt with architecture of the Northern school, whereas the Atri Samhita, as said before, deals with the southern architecture. Another published book of this school, the Sāstramuktāvali or Sri-Sāsvata Samhita deals with northern architecture (chap. XXIV of the Samhita). The Hayasirsa-Pancharatra also mainly deals with the northern architecture, but incidentally refers to the other schools. Moreover, it must be mentioned here that the Hayasirsa Pancharatra is not the name of one book only. One belonging to the Vaisnava Pancharatra school is found quoted in the Haribhaktivilāsa. Another is mentioned in Raghunandana's Maṭhapratisṭhā Tattvam as the Samkarshana Kānda of the Hayasirsa. The Varendra Research Society manuscript contains the Saura Kānda of the Hayasirsa and mainly deals with the worship of Surya.

We may know from the Hayasirsa-Pancharatra and the Agni Purana that though acquainted with other schools, the Vāstuvidyā related therein was of the Nāgara school. In the Agnipuran chapter on 'names of temples' (Prāsāda Sāmānya

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Lakshana Ch. 104. 21½), it is said that "These names are of temples of the Nāgara school. The names of Lāṭa temples are also the same." The Hayasîr. P. also (Ch. 18) says that "these are names of Nāgara temples ; the Lāta, Drāviḍa and Vavāṭa (Vairāṭa) temples differ" ; and points of difference are also noted in the next verses. We may, therefore, conclude that the Lāṭā, and Vairāṭa schools of architecture had already developed before the 10th century (Samarāngana) as a little variations of the Nāgara School. The Visnudharmmottaram is a later compilation of the North Indian style (7th to 9th century) and so were the works of Mandana Sutradhāra (15th century). We cannot trace the history of North Indian Vāstuvidyā after the 15th century.

The Samarāngana Sutradhāra, I suspect, is a work of the Lāṭa school. If it was written by Bhoja of Malwa, Malwa being near to Guzerat (or Lâṭa), the book primarily must have dealt with the Lâṭa school of architecture and it is therefore that at the very outset it describes the 64 Vairājādi temples (Ch. 49) out of which, 45, as we know from Agnipurana, were also names of the Lāṭa temples. Moreover it later on describes many other classifications of temples including the Nāgara, Vairāṭa, Drāviḍa and the Bhumija[91] but does not refer to the Lāṭa temples at all.

The list of authorities in the Agni Purana (as well as the Matsyapurana list) again supplies a valuable information. The names in the Agni Purana list which are known to us include those of writers of both the Schools. Thus the works of (1) Hayasirsa and (2) Garga belonged to the Nāgara school and (1) Prahlāda (2) Nārada (3) Visva (4) Atri and (5) Vasiṣṭha and perhaps also Nārāyana, as we have discussed, were of the Drāviḍa school. Saunaka is not well known to us. Thus we find that the Matsya Purana and the Agni Purana, though primarily works of North India, at least in matters of Vāstuvidyā, had also consulted the works of the Drāviḍa

(91) Samarāngana. s.—Chapters 55—62.

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school and also perhaps those of other schools. This factor indicates a period in which, in spite of the existence of the different schools of Vāstuvidyā, Indians did not make any invidious distinction between them. The authorities of one school were respected as such by those of the other schools ; such as, Visvakarmā was regarded both by the North Indian and South Indian School. They copied one another. It was a period when the Puranas and other North Indian religious works and the Agamas of the south were being followed and respected in all parts of India. The Vāstuvidyā of one school was also imitated by the other. This explains similarity of some of the S. Indian works with those of Northern India in many respects (See Table of temples). We also find therefore temples of North Indian order being built in the South and Vice versa. There might have been a period when distinction could not be made between the North Indian and South Indian architecture.

It was in this period when the Pancharatra Tantra works were rising, that some of the Agamas of South India were composed and Vāstuvidyā was inserted in them. The available Agama works, mostly in Mss, are the Kāmikāgama, the Suprabhedāgama, Karanāgama, Vaikhānasāgama, Amsubhedāgama and so on. Dr. Acharya mentions the names of 28 Agamas[92] and has summarised some of them. Of these, it has been discussed already that the Amsubheda Agama of Kasyapa, as available nowadays, is undoubtedly a very late work (see also Ch. XVI). The Atri Samhita (an Agama of the Vaikhānasa school) or the Samurtārchanādhikaranam, as published, is a work of the Southern school. Though a late work, as it is acquainted with 96 kinds of temples and houses, it contains early traditions of the Southern School. It does not know the division, noticed in other southern works, of temples into the Nāgara, Drāviḍa and Vesara schools. Temples of 4 sides, 8 sides, 16 sides or round ones are called in it Brahmmacchanda.

(92) Acharya—Indian architecture p. 23 f. n.

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Viṣnucchanda, Indracchanda, and Rudracchanda respectively. The endings 'Kānta' after Brahmma, Visnu etc. which are found in later works, are also absent in it. It, further, does not classify temples according to the number of storeys, but in a general way. It is acquainted with temples of 12 storeys only.

Though the Agamas generally represent an early stage of the Vāstuvidyā of the Southern school, from the summary of the Kamikāgama we find that this Agama is acquainted with the later meanings of the words 'Nāgara', 'Drāviḍa' and 'Vesara' (see chap. XIV). This is true also of the Suprabhedāgama. This clearly indicates the origin of these Agamas in a period when the real significance of these terms were forgotten by the people of the south. Though, according to Acharya, the Kāmikāgama contains 20 names of Sālās which, he thinks are equivalent to those of the Prāsādas or temples, the contents of the Kāmikāgama indicate that it has another chapter (Ch. 58) dealing with the storeyed buildings or temples. This indicates that the Agamas followed the system of classification of temples as found in the extant Silpa works of South India but were also similar in some respects with the Northern texts (Brihat Samhita etc.)[93]. The division of Sālās and their names in this work should be compared with those of the Sālās in the Mayamatam and the Silparatnam with which they have got similarity in some respects but not in all (see Table 7). The Karanāgama and the Suprabhedāgama do not deal with these storeyed buildings (as Acharya's contents of these books indicate), but with classification of temples in a general way. The names of temples in the Suprabhedāgama are twelve (not 10 as Acharya thinks) and are similar to those found in the Silparatnam and the I-S-G. Paddhati. But the descrip-

(93) Suprabheda Patala 30—refers to the uppermost part of the temples as the Sthupi and not Āmalasāraka. This is a further proof that these works dealt with Dravidian temples.

"Anyasarvam Samproktam Sthupyantam Kārayed-Budhaḥ."

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tions of these temples therein refer to the fact that these temples could be twelve-storeyed[94]. Thus the Suprabhedāgama also knew such kind of classifications according to storeys. In various other respects too (specially the method of treatment) the contents of these Agamas indicate that they were more allied to the extant treatises on South Indian architecture than with those of the north and must have been works of a late period (i.e. after 6th century A. D.)

The most valuable of the Agamas that have been printed is the Vaikhānasāgama of Marîci. The date of this book also must have been later than some of the known Agamas— (perhaps the Suprabhedāgama and Karanāgama). It not only knew the classification of structures into Nāgara, Drāviḍa and Vesara, but also the 96 kinds of temples (as in the Atri Samhita and the I-S-G-D-Paddhati). It divided the temples according to their storeys, as found in the Southern Silpa Texts (in addition to the general classifications found in some Agamas). Two strong reasons for assigning a late date to its composition are that :—(1) It refers to seven Prākāras (walls) around the temples (Southern texts refer to five only; see Mayamatam etc) (2) According to it, the Gopurām could have 12 storeys (other early southern texts refer only to seven storeyed Gopurams).

It was also later than the work of a Bhṛigu as it itself refers to Bhṛigu's name (Patala VII) ("Eteṣāmanuktam Sarvaṃ Bhṛiguktavidhinā Kārayet"). It was perhaps earlier than the Atri Samhita, as the latter work refers to the authority of a Marîci (Atri Samita I. 40). The Vaikhānasāgama may be supposed to have been written between the 7th and 9th century A. D. after the rise of the Pancharatra school and near about the time of the I-S-G-D-Paddhati.

But at the same time, several factors also lead me to infer that some of the Agamas contained the earliest Indian texts of

(94) Ā Dvādasatalādevam Bhumān Prakalpayet (Suprabheda Patala 30).

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the South. I have noticed that the religious works while dealing with Vāstuvidyā always try to preserve the earliest traditions, because as they are connected with religion, they think it proper, according to the Indian traditional method of conservatism, to cling to the earliest religious traditions and deviation was regarded as a sacrilege. This is true also regarding the northern texts. The Matsyapurana deals with the traditional 20 types of temples and this has been copied in all later religious works which contain these subjects (such as the Haribhakti Vilāsa). This is supported by the fact, that the classification of temples found in the Suprabhedāgama was followed later on by not only the Silparatnam but also the I-S-G-Paddhati and Atri Samhita and other religious works. They did not follow the Mayamatam classification, but the religious texts of the Agamas. (See Table IC) This classification, moreover, has got a greater similarity with that found in the northern texts and hence, I think, was an earlier sort of classification. This also explains how the Tantra-Samuccaya being a late work followed earlier traditions (see chap. XIV). I think, of these the Kāmikāgama is a late work as it confuses Prāsādas with Sālās and does not contain the early form of temple classification.

The Suprabhedāgama prescribes only 12 storeys to temples, which also, according to me, indicates an early stage of South Indian architecture and the Vāstuvidyā of that school (see chap. on classification of temples). The Vāstuvidyā contained in the Agamas, therefore, is of a very early period of the Dravidian Vāstuvidyā, when an attempt was going on to reconcile the Dravidian architecture with the tradition of the North Indian Vāstuvidyā[95]. I think this period lay between

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([95]) I do not think that the Agamas copied the 'Manasara' as Acharya contends. They agree to a great extent with the Northern texts and the Mayamatam, rather than with the Manasara which is undoubtedly a late work. The Manasara, therefore might have been indebted to the Agamas, rather than vice versa. In fact, all these works are based on earlier original works of Vāstu, as shown before.

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the 6th century A. D. (after the Bṛihatsamhita and the origin of the Dravidian style) and the 10th century (the time of Samarāngana). The Dravidian architecture was growing and the South Indian Vāstuvidyā was also assuming a new form, different from the original texts of Maya, Nagnajit, Nārada and Parāsara etc., the natures of which are still unknown to us.

We thus reach a stage or period when some of the early works on Vāstuvidyā of the Drāviḍa (Southern) school were re-written ; and several North Indian works also were perhaps re-edited in the South in a modified form, making them suitable to the developed state of architecture that had grown up in the Deccan, or to give an Aryan garb to the South Indian architecture. We know that the earliest of the extant temples of the Dravidian style could not have been built long before the 6th century A. D. Though prototypes of these buildings might have existed, it has been generally said that the Dravidian style of architecture had grown up in the 6th century A. D. We have shown that the Drāviḍa school of Vāstuvidyā existed from a very early time (Before 4th or 6th century A. D.) We have, however, now no means of knowing the nature of the buildings of South India constructed according to the style prescribed in those early Drāviḍa Silpasastras (See ch. XV). For reasons suggested later on (see chap. XXVIII), it might be, that the Dravidian style underwent a great change about the 6th century A. D. which resulted in the construction of temples in what we now know as the Dravidian order.[96] It was in such a transitional period that the earliest works on Drāviḍa Silpasāstras and some works of Northern School also were rewritten in the South.

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(96) Was it due to the 'Pallavas' ? They were intruders in the Deccan and their art may be regarded as marking a departure from the earliest South Indian style. Of course, it might have followed some earlier models.

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Such a supposition has to be made on account of the following reasons :

(1) There existed a Drāviḍa school of architecture before the 6th century A. D. (before Varahamihira), but its nature is unknown. No extant buildings may be taken as specimens of that style.

(2) What now we know as the Dravidian style originated not very much earlier than the 6th century A. D.

(3) There were South Indian Vāstu texts (which perhaps survive in the Agamas) with which the extant works like the Mayamatam etc. do not thoroughly agree.

(4) One of the earliest extant work on South Indian Vāstu-vidyā the Mayamatam, is not perhaps the original work of the author mentioned in the Matsya Purana as Maya. The quotation from Maya's works in the commentary of Bhaṭṭotpala has not been found in the extant Mayamatam. Bṛihat Samhita's reference to Maya (Ch. 56. 29) regarding size of a 'Bhumi' or storey is also not found in the Mayamatam which prescribes no fixed size but mentions many alternatives, according to number of the storey (Ch. on Bhulambavidhāna...). The chapter on 'Vajrasamghātā' as mentioned by Varāhamihira (Br. Sam 57. 8) has also not been traced. The large varieties of temples, pillars, pedestals and bases also indicate a late period. Dr. Acharya also thinks that the Mayamatam is not a very early work. This is, however, as shown by me one of the earliest of the extant South Indian Works and this must have been consulted by the later South Indian works. So there was another earlier work of Maya of which the Mayamatam is a later compilation perhaps by Ganmāchārya. The original work of Sukra who was undoubtedly also a very ancient writer on Vāstuvidyā has not been found. The Sukraniti appears to be a later compilation. Nor is the work of Agastya found, except in the form of later recensions (see 'Age of Manasara')

(5) The extant South Indian treatises treat with an architectural style which really may be identified with that of

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the extant South Indian temples of the Dravidian style in a very developed form. The extant texts therefore must have arisen in a late period, perhaps after the Bṛihat Samhita and before the Samarāngana (6th to 10th century) and some still later.

(6) Another point to notice in this connection has been overlooked by scholars. The Mayamatam .and also the Manasara, deal with classification of buildings in only one way viz. according to their storeys (of course some other minor kinds of classifications are there) and hence devote a separate chapter on Bhumi or Bhulamba-vidhāna, in which are laid down the height, length and breadth of buildings of one to twelve storeys. This shows how the division into storeys was the most important to these works. But the Silparatnam (which knows the work of Maya) refers to the Bhumilambavidhāna but deals with the classification of buildings in two places. First it has described, in one chapter (ch. 16) entitled 'Prāsādalakshana' various matters regarding Prāsādas, their measurement, classes or varieties (Nāgarādi), Alpa Prāsāda, Mahāprāsāda and names of Mahāprāsādas. It is in this chapter that Prāsādas (temples) have been divided into 20 and 32 classes with different names which I have shown below (Ch. XV), were similar to the classifications found in Northern texts. Some of the Agamas also follow this method (Karanāgama) Another division, according to storeys, has been dealt with separately in the Silparatna in Ch. 37 which is called 'Sāntikādiniyama' i. e. rules regarding houses of Sāntika, Paushṭika, Jayada, Adbhuta and Sārvakāmika classes (a division of houses according to height). It is not mentioned therein if they were classifications of temples (Prāsāda) or all houses in general. These Sāntikādi houses are also dealt with in the Mānasara in Ch. XI and in the Mayamatam in Ch 19. It is of these Sāntikādi houses that both the Manasara and the Mayamatam describe the classifications and the names in details in various chapters (Manasara Ch. XIX to XXX and

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the Mayamatam Ch. XIX to XXII). The Manasara calls these chapters 'Vimānavidhāna', 'Ekabhumi-vidhana and so on. Neither in this work nor in the Mayamatam (as in the Silparatnam) these divisions are referred to as classifications of 'Prāsādas' (temples), though in a previous chapter (Chap. X on Bhulamba) temples are said to have many synonyms among which the Manasara does not refer to 'Prāsada', but to Harmmya. In the Mayamatam the word 'Prāsāda' has been used as a synonym of Vimāna, Harmmya etc. (Ch. XIX. 10-12), The Manasara in chapter III, however, refers to 'Prāsāda' as equivalent to Harmmya. The point to note is that these works identified 'Prāsāda' with 'Harmmya' and 'Vimāna' and other words indicating temples. But in chapters on classification of temples, whereas the northern texts invariably use the word 'Prāsāda', the Manasara, Mayamatam, Silparatnam etc in those chapters do not mention the word at all, but refer to 'Vimāna' or 'Harmmya'. The identification of Prāsāda with Harmmya, Vimāna, mandira etc. arose in later periods. Originally these different words indicated different forms of temples or palaces, (see also ch. XXVI). Curiously enough, the chapters in the Mayamatam and the Manasara on 'Residential houses (sālās) direct that the sālās should be decorated like a 'Prāsāda' (Maya. ch. 26. 21,28 ; Manasara 35. 9). Here the word 'Prāsāda' is used in a technical sense, to mean a particular type of house and it is only in these chapters that the word 'Prāsāda' has been used by the works of this school. The want of classification of 'Prāsāda' (in its original sense) in these two books and its occurrance in other South Indian works like the Silparatnam, I-S-G-devapaddhati (also Kasyapasilpam) and several Agamas (the Vaikhānasa-Agama) on one hand and in all the northern Texts on the other, has convinced me that the Silparatnam, I-S-G-Paddhati (which among themselves are also similar in many other respects, as shown before) and the Agamas were following an earlier tradition regarding classification of buildings and that the Manasara

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and the Mayamatam follow the tradition of a period when all South Indian temples were built in the "Dravidian Style' as we find them in the surviving specimens.

I may further suggest that this later classification, according to storeys, was originally of a particular class of buildings of South India, the Vimānas, and not of Prāsādas which were the temples of the Northern Style. The word 'Sālā' in Agamas cannot be equivalent to 'Prāsāda' as Dr Acharya has taken it to be (p. 118—'Indian Architecture'). 'Sāḷā', meant a residential house and differed in shape from the Prāsādas.

The system of classification of temples in the published text of the Mayamatam therefore indicates that the work is a later recension of the original work of a Maya which was very old, and the new recension was done to fit the architectural style which prevailed in the Deccan after the 6th century A.D. The Agamas, the Silparatnam and the I-S-G-Paddhati, though later works, continued to hand over the earlier traditions, in some cases along with the newer ones. The Kāsyapasilpa being a still later work, however, took 'Vimāna' and 'Prāsāda' as equivalent words.

The six grounds mentioned above, therefore, lead to the conclusions that there were many earlier works on Vāstuvidyâ in South India, that the extant works deal with the style that arose after the 6th century A. D. and that many of them are later recensions of the earlier works of the Drāviḍa school. That several North Indian works were also re-edited in the Deccan is apparent from what has been said of the 'Visvakarmāsilpa', Kāsyapa's available works and so on (see ch. X). Some of these South Indian recensions of the Northern works (such as of Kāsyapa) must have been still later works, as they refer to sixteen storeyed temples. They could not have been written before the tenth century, perhaps after the 10th, as the Samarāngana refers only to twelve-storeyed Drāviḍa temples. Moreover, the Kāsyapa's northern recension must have existed

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up till the middle of the 9th century, as it is found quoted in Bhoṭṭotpala's commentary. The South Indian recension must have been compiled after the 9th century. Kāsyapa's work was, however, extant before the 15th century, as is known from references to it in the Silparatnam. The date of the Manasara is discussed in detail in another chapter.

Similar to the South Indian Vāstuvidyā, it must be said, did the north Indian treatises on architecture undergo innumerable recensions. As has been shown, Visvakarmā's original work is not available to us. The extant works ascribed to him are later recensions. That such recensions were necessary in all parts of India may be inferred from the fact that as architecture developed in India, new matters describing this developed state of architecture had to be incorporated in the texts on Vāstu. Indian architecture was not stagnant, nor could the works on Vāstu be so. But we think that old traditions and principles were preserved as much as possible in these new recensions. Though strict rules were laid down in the Sastras, it always gave freedom to the architects. They could do यथारुचि. That freedom gradually helped architcture to grow from age to age. Another motive of the South Indians in re-editing Northern works and even accepting Visvakarmā as an authority might be the attempt to Aryanise the Dravidian architecture. With this may be compared the name Nāgara being applied to South Indian towns (Acharya p. 181) and temples.

Something has already been said of the Lāṭa school of Vāstuvidyā. The Agni Purana, the Hayasirsapancharātram and the Aparājitapracchā refer to it. I have already shown that the Samarāngana Sutradhāra was perhaps mainly a work of the Lāṭa school. The first classification of temples made in it contains many names quite different from those found in other works, though the general system of dividing them into 5 classes according to shape (Round, Square, Rectangular, Oval or Octagonal) has been followed. Other grounds for this belief have been discussed below (Ch. XV). The similarity

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however, of some of these names with those in the Agni Purana proves the statement of the Purana that the "Lāṭa temples bear the same names", (though not exactly). What were the characteristics of this earlier period may be guessed from the Hayasirsapancharātram (Ch. 18). We give a tentative translation of the verses from the Ms ;

"The Lāṭa temples are similar to the Nāgaras but they differ in the 'Karma' (construction). Their 'Masuraka' (pedastals) and Kapotaka (the moulding) are square (Chaturasra)". The distinctive features are not clear. This is another example of authors looking on other schools as differing only in the shape of structures, as Dravidian authors later on did in defining the Nāgara, Drāviḍa and Vesara structures. The original number of temples in the Lāṭa order might have been 45, as told in the Agni Purana ; but by the 10th century it had reached 64, as is evident from the Sama. Sutradhāra.

The other known school was the Vavāṭi or Vairāṭi. The temples of this order, 12 in number, are found described in the Samarang. S. (Ch. 64) and referred to in the Aparajitapracchā. The Haya. Pan. also refers to it and describes the characteristics in the following way (Ch. 18.) 'Their 'Masuraka' (bases) and 'kapotaka' should be 'looking upwards' (Urddhvamukha). The 'Janghā' and the 'Sukanāsikā' should have slender pillars." The other details are not clear[97].

It was after the 6th century A. D., therefore, that Indian architectural treatises of all schools became further developed and all extant books may be said to have practically belonged to this period. Indian temples, most curiously, of the pre-Fourth century A. D. have not been discovered yet. We may therefore guess that it was with the growth of actual architecture that the new treatises on this subject were also written and studied. The more developed the matters

(97) Do these refer to the mouldings of bases and cornices having a curvilinear shape upwards ?

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stu-sed in a work, the later must be the date of composition
Ferg book. We may similarly guess that the early works
the vāstu also must, therefore, indicate the existence of earlier
Bcimens of Indian architecture. Both these specimens and
ıe works on Vāstu of that early period (pre-sixth or pre-
fourth century A. D.) are now lost to us.

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CHAPTER XIV

Classification of Indian Temples.

Much has been written on the Indian temples, their main styles and classifications. Fergusson divided them into the Indo-Aryan, the Dravidian and the Chalukyan ; and modern Indian writers following the Indian Silpasāstras recognize only three styles—the Drāviḍa, the Nāgara and the Vesara. Some scholars, like Dr. P. K. Acharya, further think that all texts regarding the classifications of temples found in the Silpasāstras agree among themselves and that the Manasara is the standard work which contains these classifications which were later on followed by other Indian Silpasāstras[98]. We shall examine these divisions one by one and shall later on show that Acharya's contention has no foundation.

Firstly, regarding the classification of Fergusson. He has been criticised by scholars for the various names given by him to the various styles. Coomaraswamy says that the classification of Fergusson is only unsatisfactory "on account of its ethnic-implications"[99]. The Dravidian temples, moreover, have been regarded by many scholars to have originated from earlier structures (the tumuli) of South India[100] or Buddhistic caves of the Deccan or even from several North Indian proto-types of the Gupta period. Even if these theories may not be accepted, the Dravidian or the Chalukyan temples (in fact, all Indian buildings) are based on certain fundamental principles which

(98) 'Indian Architecture' by P. K. Acharya. pages 110—120, 160—169.

(99) History of Indian and Indonesian Art p. 107. For further discussion see Chapter XXVI.

(100) Longhurst—Report. Arch. Survey, South. circle 1916-1917 Part, II p. 28 ff.
Venkata Ramannaya—Origin of South Indian Temple.
Saraswati—Indian Culture-Vol .VIII For further discussion, See Chapter XXVI.

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are Indo-Aryan in character. These we may gather from the study of the Indian Vāstu-Sāstras. Havell also criticised Fergussion's classifications on these grounds, and certainly there is much truth in his criticism. I have collected these principles in another place (Chap. XXI). The Chalukyan style again is only a development of the Dravidian style.

Fergusson's classification, however, is partially correct from the fact that even ancient Indians, the authors of the Vāstusāstras, knew different classes (order or style) of buildings called Nāgara, Drāviḍa Lāṭa and Vairāṭa etc. based on Geographical divisions. In place of Indo-Aryan, they put Nāgara and for the Dravidian, Drāviḍa and for the Chalukyan, according to some, was recognised the Vesara style. It is therefore that modern writers classified Indian buildings according to classifications found in the Silpasāstras into the Nāgara, Drāviḍa and the Vesara[101].

But this classification also has been condemned by scholars Coomaraswamy[102] says that this classification is unsatisfactory "in so far as it partly involves a definition by ground plan which does not altogether fit the facts". Some scholars, however, say that these divisions are not simply based on ground plan, but also on historical Geography[103]. This is certainly corroborated by some of the Silpasāstras. They are also based on not only ground plan but also the characteristics of the Sikharas and other features[104]. But many scholars have condemned this kind of division on other grounds and that quite rightly. As Mr. Saraswati says "with regard to the evidence of monuments the three styles can be resolved ultimately into two—the Nāgara and the Drāviḍa"[105]. Moreover, "the fea-

(101) For classification according to religious basis see chap. XXVI.

(102) Coomaraswamy HIIA p. 107.

(103) Acharya—Indian Architecture p. 130—32.

(104) All texts in the published works—Agamas, Manasara, Mayamatam, Kasyapa's works, Silparatnam, the Isanasiva-gurudeva-Paddhati etc.. Also Indian Culture vol. VI p. 21 ff.

(105) Indian Culture VIII (2,3)—pp. 184.

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tures of the Nagara plan is so very general and common that it is difficult to consider it as a sure and distinctive cognisance of a particular style". The descriptions of the 'Drāviḍa temples also, according to him, are "too meagre altogether to fit the facts[106], The Geographical (regional) definition of the styles, according to him, came after the Gupta period, as even in the 7th century, the two distinct types occur side by side at Aihole and Pattadakal[107]. Besides these difficulties, others are found, if one goes to verify the texts with reference to the existing monuments. The Dravidian temples are not hexagonal or octagonal in ground plan. The Silpa texts enjoin different deities to be enshrined in these three different temples. But one scholar has been thrown to a great difficulty in finding that the Natarāja at Chidambaram is installed in a Nāgara (square) shrine, whereas according to the Kāsyapiya, Nrittyamurtis are to be placed in Drāviḍa shrines[108]. Many such difficulties are really to be found if we accept the division of temples into the three classes Nāgara, Drāviḍa, and Vesara, as has been done by the Silpasāstras referred to above.

These difficulties, however, may be overcome if we consider the following suggestions made by me.

At the very outset, it should be noted that this division of Indian buildings into Nāgara, Drāviḍa and Vesara was a very late innovation of the writers on Indian Vāstuvidya and that the southern texts mentioning these divisions were not the only ones of their kind in India. These points will be made clear below.

The Visvakarmaprakāsa, the Bṛihat Samhita, the Matsyapurana, the Agni Purana, the Samarāngana Sutradhāra and many

(106) Ibid p. 188.
(107) Ibid pp. 189—90.
(108) K. R. Pisharoti—Indian Culture Vol. VI p. 31. His attempt (p. 37 Ibid) to solve this problem by saying that the difference in these three styles are only with reference to the shape of the Sikhara (roof of the shrine) is (Sikhara is always the guiding factor) contradicted by the texts themselves. मूलादाशिखरक्रियं षड्डुरगाश्रोद्भेदितं द्राविडम। (Silparatna p. 84) 'Mulāt' indicates even the portion below the roof.

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such other works classify temples into various kinds, of which some were rectangular, some octagonal and others were circular. It is also known from the study of these books that these temples are of the Nāgara style or order. It is therefore quite clear that according to Silpa texts, only square temples were not called Nāgara temples. Similarly we may say, circular ones were not Vesara temples and the only six-sided or octagonal temples were not the Drāviḍa temples. Nagara temples therefore, are not necessarily square in shape ; or the Drāviḍa ones octagonal and Vesara temples circular. The classification of temples into Nāgara, Drāviḍa and Vesara therefore really was not originally based on only the shape of the temples but on stylistic differences according to localities i. e. they were really Geographical divisions.

This significance of these divisions was later on confused by later writers on Vāstusāstra of the Deccan or South India. The texts mentioned in the last paragraph are, according to me, the earliest texts on Vāstuvidyā and represent the North Indian school of Vāstu works[109]. It was only in the works of the South Indian writers on Vāstu such as Maya, Kāsyapa and some other writers mentioned before that these terms Drāviḍa, Nāgara and Vesara are found together. Moreover, no North Indian texts know the term 'Vesara', though they mention the first two.

This will be supported even from the discussion regarding the identification of these three classes of buildings on Geografical basis. From references in the Manasara, Mayamatam and similar Silpa Works (of Southern School), modern writers like Dr Acharya[110] and others came to the conclusion that the Nagara style corresponds to the Northern or Indo-Aryan

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([109]) I pointed out these two schools of Indian Vāstusāstras in the paper 'Manasara and other treatises of Indian architecture' read by me in the Oriental Conference at Patna ; 1930. (see Proceedings Oriental Conference 1930, p. LX)

([110]) Indian Architecture Page 176—81

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style, the Drāviḍa style to the Dravidian or Dravidian-Chalukyan and the Vesara style to the Orissan or Chalukyan (as according to Coomaraswamy). Dr Acharya further adds that the Vesara admits of two other branches—the Āndhra and the Kalinga[111]. He therefore thinks the Vesara style to be that of Kalinga or Orissa also. The South Indian texts, however, indicate that the Vesara style was undoubtedly prevalent to the South of the Vindhyâs. The Holal Inscription and the Sorab Taluq Inscription referred to by Acharya[112] further divide Indian architectural style into Nāgara, Drāviḍa, Vesara and Kalinga, and Nāgara, Drāviḍa and Bhumija respectively. Even if the Bhumija style be taken as identical with the Vesra style, the Kalinga style, mentioned separately from the Vesara in the first inscription clearly indicates that we cannot identify the Vesara style with that of Orissa. Mr. Saraswati is therefore perhaps right[113] in thinking that Orissa temples belong to the Nagara order. Even amongst the ancient South Indian writers there is found much confusion as to the real place where Vesara and Drāviḍa buildings existed[114].

From what has been stated above I come to the conclusion that to the writers of South India, the meaning of these three terms was not clear at all, the Vesara style was the most confusing one and even if at first, Vesara meant a geographical and stylistic division of temples, later on it meant to them a classification based on the form of structures. So did the two other words 'Nāgara' and Drāviḍa meant to them only two 'classes' of structures and not two separate "styles or order" of architecture. This has been made clear by the Holal

(111) Indian Architecture p. 176.
(112) Do p. 176 footnote.
(113) Indian Culture VIII (2 and 3), p. 185.
(114) K. P. Pisharoti (Indian Culture VI p. 29 ff). The fact that this scholar says that "typical examples of these various styles in their pure form except the Drāviḍa Style are found in plenty in all parts of Kerala" (p. 37 Ibid) also indicates that these divisions were really followed with regard to what we call Dravidian temples.

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discussion which says that these terms indicated four of that of structures and not styles[115]. This was the real on Vg of these terms as understood by the people of the sp(in a late period. But as I have already said above, th is no doubt that the two terms Nāgara and 'Drāviḍa' really meant two separate orders of Indian architecture. The difficulty is about the word 'Vesara', which I think was not a style but indicated really the shape of a structure being round (similar to the ring-like ornament 'Vesàra' of the nose)[116]. This may also explain and remove the difficulties about the location of the Vesara style of buildings. If it was a style based on Geographical division it was of very late origin, as really, the Chalukyan style of architecture did not fully develope before the 11th century.

I, therefore, come to the conclusion that the earliest known orders of Indian architecture were only two—the Nāgara (of North India) and the Drāviḍa (of the Deccan and the South)[117] and that it is very doubtful if Vesara was ever really the name of a distinct Indian style of architecture (even if so it arôse in a very late period). The modern system, as followed by many scholars, of dividing Indian architecture into these three styles should not be followed any more. There are other names, besides Nāgara and Drāviḍa, to indicate the diffierent orders of Indian architecture (See Chapter XV)

This is further apparent from one more fact. Though the terms Nāgara, Drāviḍa and Vesara, as defined in the Southern texts, do not at all give a clear idea of the real characteristics of the North Indian and 'Dravidian' temples, as we know from the real specimens, there is no doubt to me that the

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(115) Acharya 'Indian Architecture' p. 130. f. n. 5.

(116) The terms 'Nāgara, Drāviḍa, and Vesara therefore meant, to South Indian architects, there Varieties of buildings of South India built of different shapes, and not three separate styles viz. of North India, of the Deccan and of South India. Vesara means also a 'mule'. Does the word refer therefore to a hybrid style ?

(117) Mr. Saraswati comes to the same conclusion from a different point of view (Indian Culture).

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works containing these three terms deal only with the 'Dravidian' style of architecture. As we all know, the main characteristics of the Dravidian temples are the square temple surmounted by a Sikhara which are divided into compartments like storeys, on the top of which are two kinds of crowning pieces, one like that on the 'Shore' temple at Mamallapuram and the other like the one on the Ganesa Ratha of that place. All the texts which I have called the Deccanese or South Indian describe temple-divisions on the basis of the storeys in the Sikharas which might be 12 in number according to some (undoubtedly the earlier authors) or upto 17 according to other writers. The crowning piece is called the 'Sthupi' with the Kalasa. The two Dravidian temples referred to above will clearly indicate that such classes of buildings have been really described in these South Indian texts. The Northern texts all describe the crowning piece of the temples as an 'Āmalaka or 'Amalasāra' and all temples called Indo-Aryan by Fergusson, in fact all northern temples and even several temples of the South[118], contain a fluted member on the top and also in the corners, looking like the Āmalaka fruit. These buildings were really built in the Nāgara style or order. The South Indian texts, so far I know, never refer to the 'Āmalaka' (except once in the Kāmikāgama and perhaps once in the Mayamatam) but always to the 'Sthupi'—the two quite distinctive features of the Northern and the Southern styles or orders of the Indian temples[119]. The authors of South Indian texts must have been aware of these two styles but they never referred to it when they divided temples into the Nāgara and Drāviḍa. The Nāgara structures, as described in the Silparatnam[120] and similar works, do not at all appear to be anything like the temples of the Northern style. That shows that these Nāgara structures were only a

(118) Pattadakal temples.

(119) See Chap. XVIII for further discussion on this topic.

(120) Silparatnam p. 84.

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variety of the 'Dravidian' style with which only these works are concerned.

But some of the Northern texts at least knew the real characteristics of the 'Southern' or Drāviḍa temples. The Samarāngana Sutradhāra contains a chapter on the various kinds of Drāviḍa temples[121] and most curiously, at the very beginning it is said that the Drāviḍa temples may consist of storeys upto 12 in number, and then these temples are classified according to their number of storeys, as has been exactly done by all the South Indian texts[122]. There is therefore no doubt that the South Indian Vastu texts deal only with the Dravidian temples and their 'Nāgara, Drāviḍa and 'Vesara' do not refer to three distinct styles or orders of Indian architecture ; but, for reasons now not clear, there was a confusion about the meaning of these words which shows (1) that this division was a later growth and (2) these meant to them not three different styles of three different countries but three classes or varieties of the South Indian temples and various other structures like the Linga, Lingapiṭha etc. This kind of division based on shape of structures was a later growth as will be evident from the discussion below about the various classifications of Indian buildings as known to the Indian Silpasāstras.

It might be that the names arose out of the remembrance of the earliest forms of Aryan and non-Aryan constructions respectively. The Brahmanas recommended square stupas for Devas and round ones for Asuras. There was a time when the North Indian structures were square and those of the Dravidians circular. In earliest days shape, therefore, was a criterion of difference between the two schools. But later on this criterion could not apply. Is Vesara a later garb of the word Asura ?

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(121) Samarāngana Sutradhāra ch. 61, Verse 1.

(122) The book also describes here 5 kinds of bases of temples, as is invariably found in the South Indian Silpa texts. Also cf. Hayasirsa—Pancharātra (ch. 18).

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This is further evident from the fact that though the Mayamatam recognises these three divisions according to shape of the structures, in the classification of one-storeyed temple (Chap. 19) it says that the Vaijayanta building has round 'neck (Grîvā) and 'head' (Mastaka). (Cf. Mānasara-Achārya p. 111). Similarly (Chap. 20), if a two-storeyed temple has octagonal 'Vedi', Kandhara, Sikhara and Ghaṭa, it is called 'Vishnukānta'. If Vedikā, Kandhara and Grîvā be oval (Āyatavṛitta), it is called Gāndhāra.

As mentioned before, the Mayamatam was, in classifying temples according to storeys, describing here the Dravidian temples. But some of the structures described above appear to be belonging to the 'Vesara' style (round Sikhara). We shall then have to say that here is being described a Vesara temple in the geographical sense and not a Drāviḍa one. But we may think that really a Vesara temple was being mentioned in the text. In that case, how could the oval temple (Gāndhāra) which according to scholars is a Vesara temple be described as belonging to the 'Gāndhāra class, the name indicating as if another class based on a geographical division is meant thereby? This may also be said about the descriptions, found in the Manasara, of the various classes of twelve-storeyed temples. Though these temples (of 12 storeys) were really Dravidian temples, the names given to them indicate as if each of them belongs to a different style of a different country in India. Dr. Acharya really says "These ten kinds are named after the historic places" (Dictionary p. 402) and he has further discussed many things regarding this division (Indian Architecture. p. 173-75). But the question is that if the Manasara was acquainted with the twelve-storeyed temples of different places of India and was describing them here, why is it that in so doing it does not at all bring out the real characteristics of the temples of different places of India? The Manasara, therefore, was simply describing the various varieties of twelve-storeyed temples of the Dravidian style, the

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names of which had been taken from those of Indian countries. Similar is the case with the Gāndhāra temple mentioned above. The Mayamatam (XXII. 82) in describing the twelve-storeyed temples says that "Its head (Mastaka) may be four-sided, eight-sided, sixteen-sided or circular and has a stupikā". Here the mention of differently shaped 'Mastaka' of temples does not indicate that they belonged to different countries. The mention of the Stupikā clearly shows that all these temples were of the Dravidian school. Square temples in these chapters do not refer to the real Nāgara temples but to varieties of the Dravidian temples. That a custom arose, in the 10th century, of naming temples after those of places is known from the Samarāngana (ch. 61) which mentions Drāviḍa and Pundravardhana as names of temples, not obviously of Bengal or the Deccan. The Bhuvanapradipa also refers to Drāviḍa, Barabhi and Kosali temples as varieties of Orissan temples. Thus the words Nāgara, Drāviḍa and Vesara in these texts do not refer to the different styles or orders of Indian temples, but merely to varieties of the Dravidian temples.

The fact that these texts really ascribe the three classes of temples to different localities of India may be regarded as a clear proof of these three classes being based on Geographical factors. But it is not so. I have already shown that there was a confusion among the writers of these texts regarding their proper locality. The same doubt has also been felt by modern writers on this subject. The only possible explanation for this is that these southern texts, in copying from earlier texts, put down these three names (two of which were certainly primarily based on geographical divisions of Indian architecture) along with older texts referring to their locations.

As has already been said, the Southern texts, as we find them now, were late compilations. Therefore, though they copied many earlier matters of Indian architecture, they could not thoroughly reconcile those early texts with the advanced

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architecture of their own country. They remembered that Nāgara temples were square in a very early period and the Drāviḍa hexagonal or octagonal and the Vesara circular or oval; but as they were not concerned with the Nāgara or Vesara architecture, they did not care to describe the real characteristics of the Nāgara (of North India), or Vesara temples. As time went on, confusion arose in South India regarding the real characteristics of the Nāgara and also perhaps the Vesara temples. It was, therefore, that in a late period they differentiated these three orders on the basis of their shape alone and at the same time remembered their localities. But as gradually Dravidian temples also assumd these various forms (as described in chapters on the one-storeyed or two-storeyed buildings and the like) these three names were also remembered; but the fact that they were not based on mere shape or localities (but in various ways) was totally forgotten and they were regarded as names of varieties of the Deccanese temples. It has therefore been said, at the very beginning, that these three terms to the South Indian architects (though they originally meant stylistic orders based on geographical division) meant in later periods only varieties of the Dravidian temples and also other structures of the Deccan from the Vindhyas to the Cape Comorin. It is very difficult to say, however, at what age this confusion arose. The Atrisamhita did not know these, but the Agamas knew these terms and so did the other later texts. But I have shown elsewhere that the extant works were later recensions of older texts. The later authors confused the meaning of the terms—what indicated really separate orders were taken by them as only varieties of a structure, as Dr. Acharya confused the different varieties of Deccanese pillars (See Chap. XIX) with different orders of the Indian pillars. The Kāmikāgama passage quoted by Acharya (Dictionary p. 302) saying that a Vesara structure was fit only for the low class people also indicates that the 'Vesara' style did not belong to a country different from those occupied by the

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Nāgara and the Drāviḍa ones, but was a class of Dravidian structure of bad quality.

It may further be discovered that in a later period the confusion became greater and further attempts were made to make the descriptions of these three classes of structures fit the existing condition of South Indian architecture. If we compare the various texts on this subject among themselves we may discover three stages of the development of these texts. (See Pisharoti-Indian Culture Vol. VI).

(1) The earliest Agama (Suprabhedāgama), Mayamatam (Chap. XIX) (A) of Mr. Pisharoti and Tantra Samuccaya—In which the Drāvida and Vesara buildings differ only as regards shape of the portions above the neck and only circular or octagonal shapes are mentioned respectively for Vesara and Drāviḍa. I have already shown that religious books follow the earliest texts. Mayamatam also is an early book and hence we notice least complications in this division, in these books.

(2) Kāmikāgama, (already suggested to be a later Agama), Mayamatam ch. XIX and (B) (which may be an interpolation in the later recension), I-S-G-Paddhati and Mānasara—The first two know the early classification (as no 1 åbove) but also add a variation in which, besides octagonal and circular shapes, other shapes, hexagonal, ellipsoidal and apsidal, are introduced. The old version and the later forms are here reconciled by alternative descriptions.

(3) The latest works—Kasyapa, (proved before as a very late work) and Silparatna—which in addition to the octagonal and circular shapes respectivly of the two structures, say that this differentiation is laid down for such Vimānas which have no Kuṭa or Koṣṭha. This factor is seen here for the first time. The later works (2 and 3) also ascribe to these divisions other qualities such as their being Satva, Rajas and Tamas; some Brahman, other Vaisya or Kshatriy, some fit for some Gods and others for other Gods. They are not found in earlier texts—Tantrasamuccaya (though a late work—a

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religious work and hence follows earliest system), Suprabheda and Mayamatam, but found in those placed in (2) and (3). The various points of difference mentioned indicate many things except the characteristics which really distinguish the Nāgara and the Drāviḍa and structures of other orders in their real sense. The later works containing later forms must, therefore, have referred by these terms to nothing but the developed state of the South Indian structures. These three terms had altogether different meanings to the South Indian architects from what they signified. Mr. Pisharoti also notices the later development of these classifications in the Kāmikāgama and the Kasyapa Silpa. (Vol. VI. Indian Culture.) ; this development, was certainly due to advancement of architecture in different localities of India, but this cannot explain how these works describing the Drāviḍa architecture included forms equally applicable to the Vesara, Nagara and other structures.

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CHAPTER XV

Various orders of Indian Architecture

As I have already pointed out before that the authors of the Indian Silpasāstras really had an idea about the existence in India of various styles or orders of architecture. They divided these styles firstly into two—the style of Visvakarmā and the Drāviḍa style[123]. But these two orders of Indian architecture later on gave rise to many others. According to me, the earliest Indian Vāstu-works knew of only two orders or styles, the school of Vísvakarmā and Maya. Later on arose the the two styles—Nāgara and the Drāviḍa. This is known from the early texts. (It was also known to the latest North Indian Silpasāstras, such as the Samarāngana). The Agni Purana and the Hayasirsa-pancharātram refer to, in addition to these two orders, a third one named Lāṭa. Mr. Saraswati has also discovered this name in the Aparājitapracchā[124]. The Hayasirsapancharātram and the Samarāngana Sutradhāra add to it a fourth one viz. 'Varāta'. The real word, I think, is 'Vairāṭa', as Mr. Saraswati finds it in the Aparājitapracchā[125]. The Samarāngana further mentions a fifth style called the 'Bhumija, as the Sorab Taluk Inscription, mentioned by Acharya,[126] does. The same work describes various other kinds of temples but (some perhaps of the Lāṭa style, as shown already) does not

(123) Bṛihatsambita chap. 56, verse 29 refers to a school of Maya and Chapter 58, Vere 4 refers to the 'Drāviḍa' School.
Agni Puran (Cal. Ed. Ch. 104 verse 22).
Hayasirsapancharātram (V. R. S. Ms. ch. 19). cf. also Samarāngana Sutradhāra.

(124) Indian Culture VIII p. 183, f. note.

(125) Do f. notes. Both the Hayasirsa and the Samarāngana, however, read the word as 'Vavāṭa' or Varāṭi. The editor of the Samarāngana reads it in various ways but the last verse of the chapter reads it really as 'Vavāṭa'. (Samarāganasutradhāra ch. 64).

(126) Samarāngana Sutradhāra ch. 65.

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clearly say if they belong to different styles of architecture or are but simply varieties of the same style. It, however, refers to two groups of the Nagara temples, the names in one group being exactly similar to the names described in the early North Indian texts (See Table I A). Its knowledge of the Drāviḍa temples has already been mentioned. From all these references we may conclude that the earliest styles of Indian architecture were the Nāgara and the Drāvida. As time went on (exact age is difficult to surmise) and as Indian architecture developed in different localities, different local styles, with distinctive features, began to arise—the Lāṭa, Vairāṭa (Varāṭa), Bhumija, Vesara, Kalinga, Andhra and perhaps several others mentioned in the Manasara when it describes the twelve-storeyed temples[127]. It was in such a late period that the South Indian architects confused the real significance of the terms 'Nāgara and 'Drāvida' and 'Vesara' and took them to refer to only varieties of the same kind of structures viz. the Dravidian one. The 'Vesara' might or might not originally refer to an order or style of architecture.

That the division of structures into Nāgara, Drāvida and Vesara on the basis of the shape of buildings (square or others) is a late system of classification is also evident from the fact that several North Indian texts also classified temples of the Nāgara and other North Indian styles on the basis of their being square, rectangular, octagonal, circular, or oval in shape ; but they never refer to the 'Vesara' order. The number of such temples was 45 according to some of the texts[128] and 64 according to others[129]. This large number of temples

(127) Acharya—Indian Architecture p. 113. It is to be noticed that this list contains really names of different orders—Such as Drāviḍa, Virāṭa, Gurjaraka (may be Lāṭa), Kalinga and some others of later origin But as shown before the real meaning was lost to the Manasara.

(128) Agni Purana ch. 104, verse 13.
Garuḍa Purana ch. 47, verses 19-34.
Samarāngana ch. 49, verse 3 ff.
Hayasirsapancharātra ch. 12.

(129) Samarāngana gives the following classifications :—
(1) Ruchakādi 64 (ch. 49).

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indicates that it was in a late period when Indian architecture had further developed (number of varieties of temples had grown from 20 to 45) that a classification according to the shape of these structures was necessary. Classifications on other basis were later on introduced in India as found in the Samarāngana[130]. The names of 11 temples in the "Bhuvanapravesa" and those of 14/15 temples mentioned in the Bhuvanapradîpa (See Table I E), the Oriya Silpa works, are similar to those of the Nagara school of the early period. As discussed above, the Orissa style should, therefore, be included in the Nagara architecture and not the Vesara one as Acharya thinks.

As we have traced the development of the various orders or classifications of temples in North India, we may do the same also of the South Indian buildings. The method of classification, found in many South Indian texts, based on the number of storeys and the various varieties of each class (one-storeyed, two-storeyed and so on) appears to me to be a later system. The number of temples mentioned in some of these texts is 96 but 98 according to the Mānasara. The Mayamatam has described 44 temples but must have known more because it gives details only of temples having one to four storeys.

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(2) Meru-ādi 16 (ch. 55).
(3) Another Ruchakādi 64 (ch. 56).
(4) Sridharādi 50 (ch. 57) The heading of this Chapter I think has been wrongly printed as Meru=Ādi Vimsikānâma. It will be Sridharādi Panchāsatnāma ch. 57. Somewhere after p. 87 should begin the chap. 58 containing the next Group.
(5) Meru-Ādi 20 (ch. 57 printed—sould be ch. 58).
(6) Vimānādi 64 (ch. 59).
(7) Srikuṭādi 36 (ch. 60).
(8) Drāviḍa Prāsāda (ch. 61-62).
(9) Mervādi 20 Nāgara (ch. 63).
(10) Digbhadrādi 12 (Vāvāṭa) (ch. 64).
(11) Bhumija Prāsāda ch. 65.

(130) This increase in the number of varieties of buildings had taken place before Bhaṭṭotpala (9th century) who says that according to Hiranyagarbha there were 120 classes of buildings (not temples). The Vishnudharmmottaram refers to 100 kinds of temples. (See Table I F).

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Details of other storeyed temples have not been described. This large number of temples described must indicate a late date for the introduction of this system of classification. This is evident from the fact that there was in South India an earlier sort of classification in which no consideration was taken of the storeys, but the structures were described in a general way[131]. This classification is found in the Āgamas, the Silparatnam and the Isānasiva-Gurudeva-Paddhati[132]. These works knew also the classification according to storeys, but have also noted down the other sort of classification which was, I think, an earlier system. My reason for thinking this is that the names of buildings mentioned in this classification[133] are almost similar to the names of temples mentioned in the North Indian Silpa texts. These are 32 in number. Moreover one thing to be noticed is that very few of these names end with the suffix 'Kānta' as do the names of temples found in the other South Indian classifications. The later the classification, the names with the suffix 'Kānta' are larger in number. This will again be shown, when discussing the date of the Manasara[134]. These facts led me to think that the classification mentioned here must be an earlier system. This system might therefore be taken to indicate the forms of the South Indian temples[135] before the introduction of the 'Dravidian' style with its innumerable

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(131) See ch. XIII.

(132) The Atri Samhita, though a southern work and refers to 96 temples, does not refer to the usual division of buildings into "Drāviḍa" Nāgara and Vesara, as other South Indian works do. The names are similar in many respects to those in the I.S-G-Paddhati.

(133) Suprabhedâgama gives only 12 names (Acharya—'Indian Architecture' p. 118). The number is not 10 as Acharya thinks. I have found in V.R. S. MS. copy 12 names.

Silparatnam (ch. 16, verses 91-95).

Isāna-Siva-Gurudeva-Paddhati Patala 28, verses 10 to 14 and Patala 29.

(134) Also see chap. XIII.

(135) See chapter XXVI.

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storeyed temples. The smaller number of temples (32) might also indicate an earlier date[136] (See Table I C).

The Silparatnam[137] and the Isānasiva-Gurudeva-Paddhati[138] also describe another kind of classification of temples into 20 varieties (Nalina, Pralina etc.) which is also not found in the Mayamatam or the Manasara, but found only in some of the Agamas and the Atri Samhita. This classification also might have been an earlier South Indian system. The number (20) is similar to that of the Nagara temples. In course of time there arose 96 kinds of buildings in South India, including this 20 and 32 previously mentioned. These buildings are described in the I-S-G. Paddhati. Though the Atri Samhita refers to 96 kinds it really describes only about 82 varieties[139].

Then arose the general system of classification of the South Indian temples, according to number of storeys, which (98 in the Manasara) again is not the same in all the texts. The names of the temples differ in different texts, though they might have the same number of storeys. The Silparatnam classification agrees with that of the Mayamatam, which two again differ from that found in the Manasara (See Table I D). The Manasara, therefore, appears to have been unknown to the Mayamatam ; and Acharya's contention that the Mayamatam was indebted to the Manasara, therefore, cannot be accepted. Either the Mayamatam was following a different tradition or the Manasara was a much later work. This later date of the Manasara (which will be discussed in detail below) is further suspected from the fact that whereas the Mayamatam definitely says that the number of storeys in the Gopurams could be only upto seven[140] the Manasara and other works described

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(136) The number of temples mentioned in a book is undoubtedly (though not invariably) a good criterion of the age of the book.

(137) Silparatnam ch. 16, verses 87-90.

(138) I-S-G-Paddhati Patala 28, verses 7-9.

(139) Atri Samhita ch. 7.40.

(140) Mayamatam ch. 24, verse 124 and last verse.

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Gopurams upto seventeen storeyed ones[141]. The Silparatnam[142] and the Isānasiva-Gurudeva-P.[143] also say that Gopurams could have only seven storeys and not more. The Mayamatam Silparatnam etc. were therefore following an earlier tradition (though Silparatnam was really a late work) than that followed by the Manasara which was a later book on architecture. So did the Kasyapa Silpa refer to sixteen-storeyed temples, unknown even to the Manasara.

We should also refer here to a classification of Indian paintings made in the Visnudharmmottaram. Paintings according to it may be (1) Nāgara (secular) (2) Satya (sacred) (3) Vainika (lyrical) and (4) Misra (mixed) (Coomaraswamy J.A.O.S. Sept. 1928 p. 265). Here the division does not evidently signify any distinction based on geographical reasons. All these divisions were varities of North Indian paintings which were of the Nāgara class in general. The Visnudharmmottara is undoubtedly, as shown by me (Ch. XVI) a late compilation, though containing very early traditions.

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(141) Acharya—Indian Architecture, p. 52.
(142) Silparatna ch. 41, verse 5.
(143) I-S-G-Paddhati Patala 35, verses 94-95.

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CHAPTER XVI

Age of Various Forms of Classifications

Tentative suggestions may now be made as to the probable dates or time limits of the various classifications of Indian buildings as found in the various Silpasāstras. This will also help us in noting further data in determining the dates of some of the known texts of the Indian Vāstu works, which has already been discussed in chapter XIII.

1. Classification of temples into 20 kinds found in the Puranas and allied works must have been prevalent in the 6th century A. D, i. e. the time of Varāhamihira. But this must have originated long before this period. Varāhamihira in compiling the chapters on Vāstuvidyā says that he had taken these matters from the works of his predecessors like Garga, Visvakarmā and others including Manu[144]. I have shown elsewhere that Garga's writings might have existed in India in the 2nd century B. C. and in any case since the 1st or 2nd century A. D. This division has been found also in the Matsya Purana which acording to many scholars was completed just at the beginning of the Gupta period. Thus we may guess that long before the Gupta period temples were divided into 20 classes, and temples with Sikharas of various shapes had already grown up in India. The flat roof alone, therefore, cannot be taken as a characteristic of the Gupta temples, as Cunningham did. The earliest temples of Northern India have been examined by Mr. Saraswati[145] who is of opinion that the Nāgara style emerges in its typical form and characteristics by the 8th century A. D. According to Dr. Jayaswal, however, the Tigawa, the Nachna Kuthar and some other similar temples were of the pre-Gupta age, of the

(144) Bṛihat Samhita ch. 65, verses 29-31.
(145) Indian Culture VIII, p. 184 and 186.

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time of the Vākātākas or Bharasiva Nagas from whom the Nāgara style originated. Whatever might have been the date of these temples, the facts stated above clearly indicate the existence of temples with 'Sikharas' long before the Gupta period. Gupta inscriptions also refer to Sikhara temples existing before the 5th century A. D. The Sun temple at Mandasor erected in 437 A.D. by the silk-weavers of Guzerat clearly demonstrates that it was a towered temple (Fleet–Gupta Inscription pp. 80-85). Unfortunately, however, we have no surviving specimens of pre-Gupta temples. The Gupta inscriptions call temples 'Prāsāda' which must have been spired structures. But the Nāgara towered temples must have originated long before the Gupta period, and quite likely in the 2nd century B. C. (See chap. XXVIII).

In this period, in the Deccan also, these classifications of temples might have been known and followed in construction. Even the late work Isana-S-G-Paddhati says ' Twenty kinds of temples were main ones" and mentions, among these twenty, several names some of which are similar to those in the northern texts. (See also chap. XXVI). But this is also certain that another traditionary method viz. that of the school of Maya[146] was running there side by side with the Northern traditions. In fact, in this period (or in any other period), no rule existed prohibiting the erection of a Northern type of temple in South India or of a Southern temple being erected in the North. This may explain the existence of Nāgara type of temples side by side with Drāvida type of temples at Pattadakal and Aihole (in 7th century A. D.) and of Dravidian forms in the Gupta period at Nachna Kuthar, Bhumara or at Lad Khan[147]. Several early writers on South Indian architecture might have been living in the pre-Gupta period and their names may be cited as the earliest authorities on South Indian texts. (See next para).

(146) Brihat Samhita ch. 65, verse 29 and ch. 66.
(147) See also chapter XXVI and XXVII.

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2. By the time of Varahamihira i. e. 6th Century A. D. the two styles—the Nāgara (North Indian) and the Drāviḍa (South Indian storeyed style) had been definitely established[148]. In fact the earliest known structures in the 'Dravidian' style all date from the 6th century A. D. (the Muhakuteswar temple at Pattadakal, Mamallapuram Rathas) though earlier examples might have existed. From this time, therefore, Vāstu works dealing definitely with Dravidian buildings (with storeys and other peculiarities) were written in the Deccan and some of these works might have been mentioned in the Bṛihat Samhita. These early writers may be called the writers of Vāstu Sāstra of the Maya School (the cause of giving this name I have discussed elsewhere). They were Brahmmā, Tvashtā, Maya, Mātanga, Bhṛigu, Kāsyapa, Agastya, Sukra, Parāsara and Nagnajit. Some of these writers were perhaps flourishing before this period, (i. e. before 6th century and 4th century), as they are mentioned in the list of teachers of Vāstu in the Matsyapurana[149]. It is also possible that during this period some of the works on Vāstu current in North India were re-written in the South in a new form suitable to the Dravidian style of architecture. I have showed elsewhere that the treatises of Kāsyapa,[150] Visvakarmā and Parāsara and also perhaps of others were thus re-edited in the Deccan. Thus arose the new school of Dravidian Vāstu Vidyā. The available South Indian Vāstu texts therefore belong to this developed Dravidian School.

3. After the composition of the Bṛihat Samhita (6th century A. D.) and the Gupta period, Indian architecture had

(148) Bṛihat Samhita ch. 56 and 57.

(149) Brahmmā, Maya, Bhṛigu, Sukra and Nagnajit (Matsyapurana ch. 252, verses 2-4).

(150) The work of Kasyapa extensively quoted by Bhaṭṭotpala in his commentary on Bṛihat Samhita appears to have been a North Indian text following the system of Bṛihat Samhita and the Puranas. But the available works of Kāsyapa and also that referred to in the Silparatnam appear to be works of the Southern School. Hence I conclude as above.

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made great advance, innumerable types of buildings and temples had been constructed, of various forms with various features not noticed before. Dandin refers to 96 kinds of temples (Vide Introduction to the 'Atri Samhita') and Bhaṭṭotpala in his commentary says that according to Hiranya-Garbha there were 120 kinds of houses. Thus before the 9th century, various kinds of classification had grown up in India. The Vishnudharmmottaram also refers to 100 kinds of temples. New orders or styles also arose in this period. New classification of temples had therefore to be made in this period. It was perhaps now that a classification was made on the basis of the shape of the temples, their being square, octagonal, rectangluar, circular and oval or apsidal. This was done in North India by dividing temples first into 5 classes (Vairāja, Pushpaka, Kailāsa, Manika or Mālaka and the Trivishtapa) and then subdividing each in various varieties. New orders of architecture also arose in North India in this period—viz., the Lâṭa, Vairâṭa. This phase in the development of the Indian building types is represented by the Agni Purana and the Garuḍa Purana[151] (the dates of which are unknown ; but I am disposed to place them between the 6th and the 10th century A. D.) which contain the new classification of Nāgara temples as well as the name of the Lāṭa order of temples (Table I B). Another book viz. the Hayasirsa Pancharātram was also composed during this period and refers to the Nāgara, Lāṭa and Vairāṭa Schools of architecture[152]. In the paper read by me in the Patna sitting of the Oriental Conference I showed that, in fact, the Agni Purana is indebted for these chapters on Vāstu Vidyā to the Hayasirsa-Pancharātram. The Hayasirsa-P. therefore was an earlier work than the Agni Purana. This age of the Indian Vāstu works culminated in the 11th century when the Samarāngana Sutradhāra was composed. This work shows its acquaintance

(151) Agni Purana ch. 104.
Garuḍa Purana ch. 47.
(152) Hayasirsa P. Rātram ch. 19.

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with not only the early 20 kinds of Nāgara temples, but also with the temples of the Drāviḍa order, the Vairāṭa and the Bhumija styles and also with various other classifications of temples not known from any other work. The Agni Purana, Garuḍa Purana and the Hayasirsa Pancharātra were certainly composed before the Samarāngana as is evident from the fact that the Vairājadi temples, according to the former works were 45 in number, whereas according to Samarāngana they were 64. The Vishnudharmmottaram[153] refers to 100 kinds of temples and hence might be a later work. It refers to the worship of Hayagrîva and hence might be later than the Hayasirsa Pancharātram. It could not be perhaps earlier than the 8th century. Thus we may conclude that from the 6th century to the 10th century A. D. almost all the known Indian styles of architecture and methods of classification of temples had grown up in India.

It was also perhaps in this period (6th to 10th century) that classification of temples according to shape was made in the South India as in the North. The South Indian texts referring to Drāviḍa, Nāgara and Vesara styles (or classes) originated now and we may guess that the real meaning of at least the first two terms might have been at first known to these writers but later on confused. The printed work of Maya, the Atri Samhita and the Mayamatam, and several available Agama works might have been composed in this period. It may be that the printed Mayamatam might be a re-written edition of the original Mayamatam ; but it is certainly a very old work. This probably existed before the 10th century A. D. During this period, the South Indian temples were constructed with Sikharas having one to twelve storeys only, and Gopurams with only seven storeys. The Samarāngana S. of the 11th century says that temples of the Drāviḍa class can contain twelve storeys in the Sikhara[154].

(153) Visnudharmmottaram ch. 86-87.

(154) Samarāngana chap. 61 verse 1.

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The Mayamatam and the Agamas really describe temples of twelve storeys and Gopurams of seven storeys (Vaikhānasa Agama mentions twelve-storeyed Gopurams). Later South Indian works, as we have shown, refer to sixteen-storeyed temples and Gopurams. Thus we may conclude that the extant Mayamatam (the traditions of which was also handed down by the later works, the Silparatnam and the Isāna-Siva Gurudeva-Paddhati) was written before the Samarāngana or in or before the 10th century A. D. It is also remarkable that the Mayamatam is the only South Indian work in which it is stated that the Sikhara can be in shape like a "ripe Āmalaka" (ch. 18.16) which is referred to in the North Indian texts.

4. After the 10th century A. D. the North Indian works on Vāstu continued to, more or less, follow the classifications of the Puranas and the Samarāngana Sutradhāra or the Hayasirsa Pancharātram. The original writings of the early preceptors of Vāstu were gradually falling into disuse or were forgotten altogether. But even as late as the 15th century Mandana Sutradhāra of Mewar upheld the traditions of dividing temples into forty-five classes according to the Vairājadi classification (as in the Agni Purana and Hayasirsa etc.)[155] Temples in the Nāgara and other northern styles, we may, therefore, guess, continued to be built up to that period.

In the Deccan, however, great changes were going on in the field of the Vāstusāstra ; and architecture was also making new advancements and undergoing changes between the 10th and the 15th centuries. It was in this period that the Chalukyan style made full progress, the Rashtrakutas, the Hoyasalas, Yadavas, the Cholas and the Pandyas were erecting new temples in new styles, which were modified forms of the Dravidian style of architecture. It was now that seventeen-storeyed temples and Gopurams were constructed in the Deccan. For various reasons I place the Manasara (see next

(155) Acharya—Indian Architecture p. 103-104.

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chapter) and the available works of Kāsyapa (Chap. XIII) in this period. The Manasara knows Gopurams with 16-17 storeys but temples of only 12 storeys. The other work is acquainted with temples of 16 storeys but Gopurams of only 7 storeys. The printed Manasara refers to Visvakāsyapa (will it be Vṛiddha-kāsyapa—an earlier or elder Kasyapa ?) as an authority consulted by it. This may indicate that there was another (earlier) work of a Kāsyapa before the Manasara, which was perhaps different from the now available work of Kasyapa. This is further indicated by the fact that the Atri Samhita though acknowledging Kasyapa as an authority is of opinion that temples can have storeys numbering 12 only (Atri Samhita VII. 13). A definite date for this stage of the South Indian Vāstu works may be inferred from the Silparatnam (15th century) and the Isāna-Siva-Gurudeva-Paddhati (11th century). The Silparatnam does not refer to the Manasara, though Acharya takes the latter to be a standard work of South Indian architecture. It, however, takes the Mayamatam and a work of Kāsyapa as its main authorities[156] and also refers to Agastya. It refers to sixteen-storeyed temples (as in Kasyapa's work) and to seven-storeyed Gopurams only. The Isāna-Siva-Gurudeva-Paddhati also does not refer to the Manasara but to Maya and Parāsara. About fourteen passages attributed in the I-S-G-Paddhati to Maya have been found out by me in the printed Mayamatam. These discussions therefore, indicate that the work of Maya was earlier than the I-S-G-Paddhati (11th century A. D.). A work of Kāsyapa was also existing before the Silparatnam (of 15th century). This work of Kasyapa available to the Silparatnam refers to sixteen-storeyed temples[157]. As the Manasara does not refer to seventeen-storeyed temples, we may guess that the Manasara was an earlier work than that of Kāsyapa and the

(156) There is great similarity in the verses even. (See Indian Culture VII. 1. p. 78)

(157) The Silparatnam itself says it (ch. 37 verse 110).

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Silparatnam, but the reference in the Manasara to sixteen storeyed Gopurams may point to its being later than Kasyapa's work. Moreover it cannot be explained why the Silparatnam being an avowed work on architecture does not refer to the Mānasaram at all. The I-S-G-Paddhati being a religious work might have followed a different school when dealing with architectural matters (as it did that of Maya and Parāsara) and had no necessity therefore to refer to the Manasaram. But this cannot be said of the Silparatnam. Moreover, the Silparatnam mentions in addition to the later system of temple classification, an earlier one which is quite different from that found in the Kasyapiya or the Mānasara. This shows that it is difficult to ascertain whether the Manasara was later or earlier than the Kasyapa's work. But this is almost clear that the Manasara as well as the Kasyapiya had not gained so popularity even in the 15th century as the work of Maya had. I would therefore place the Kāsyapiya and the Manasara between the 11th and the 15th century A. D. (Also See ch. XIII).

Regarding Kāsyapasilpa, Mr. Pisharoti admits that (p. 25 Indian Culture vol. VI) it is the most advanced from the point of view of the structural development and therefore represents the latest phase of Indian architecture. But still he calls it a fairly old work; of course, how old has not been said by him. I, however, agree with his statement that even later works did not forget the ancient basis of classification, not only because of the reasons he has enunciated in the footnote [(11) p 25] (which is also true) but also because these works were based on earlier texts and at the same time tried to include matters fitting the existing conditions. Moreover the Mayamatam classifications of temples, Gopurams, bases, pedestals and pillars all point to an earlier stage of architecture. Thus the Mayamatam was undoubtedly an earlier work than the Kasyapiya, Silparatnam and the Manasara. Kasyapa's work knows only 4 kinds of Upapiṭhas, all the 14 kinds of

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Adhiṣṭhānas as mentioned in the Mayamatam, besides seven other kinds, 15 kinds of pillars, some similar in name to those in the Mayamatam and some to those in the Manasara, 15 kinds of Gopurams, similar to those mentioned in the Mayamatam (but unlike those in the Manasara) and temples of 98 varieties of which 45 names are similar to those in the Mayamatam, rather to those mentioned in the Manasara, though it refers to sixteen-storeyed temple which is unknown to the Mayamatam (See Tables). Thus Kasyapa's work was later than the Mayamatam. Comparison of the Kasyapa's work with the Manasara indicates that though in some respects the former is more advanced than the Manasara (E. G. it describes sixteen-storeyed temples, unknown to the Manasara), it is likely that it is an earlier work than the Manasara, as the other classifications indicate. As regards residential houses, Kasyapa prescribes that "Houses of human beings should not have more than 7 storeys, and king's houses might be of seven storeys ; while the Manasara enjoins "five to twelve storeys". It was therefore more popular in the 15th century (time of the Silparatnam). Moreover if the Manasara knew of twelve-storeyed temples of all parts of India, as Acharya suggests, it ought to have known the sixteen-storeyed temples too; for by the 11th century sixteen-storeyed temples had grown up in North India. (Vide description of the 'Meru' temple in the Samarāngana). This shows that the absence of reference to sixteen-storeyed temples does not necessarily indicate that the Manasara was earlier than the 11th century. It was acquainted with sixteen-storeyed Gopurams which was unknown to the Kasayapa Silpam and other South Indian works. The omission to refer to sixteen-storeyed temples was therefore intentional and not due to its early date. Moreover, the Manasara also refers to a Visva-Kasyapa as an earlier authority. Therefore the Manasara may be regarded as a later work than the Kasyapa-Silpam. It may be safely said that in its present form it was not a standard work of South

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Indian architecture and that it was not copied in the other available South Indian works, as Dr. Acharya holds.

The date of the Manasara will be discussed in more details in the next two chapters :

This chapter, read along with the tables of temples (No. 1 to I F), will therefore indicate the various developments of the system of classification of temples of various Indian orders. This may be indicated in a Tabular form, as below :—

North Indian temples :—

1. Visvakarmā and Nāgara temples—(Meru-ādi) 20 kinds —earliest.
2. Nāgara Temples —(Vairājādi) 45 kinds —After 6th century A.D.
3. Nāgara —(Srikuṭādi) 35 kinds —before 11th century
4. Nāgara (?) —100 kinds (Visnudharm mottaram)

Lâṭa —45 kinds (Agni Purana) —After 6th century A. D.
Lāṭa —64 kinds —Before 11th century
Vairāṭa —12 kinds —Before 11th century.

Unknown types—Meru-Ādi	16 kinds	)	
—Ruchakādi	64 kinds		
—Sridhara-ādi	50 kinds		Before 11th century.
—Meru-ādi	20 kinds	}	
—Vimānādi	64 kinds		
	=214 kinds	J	

B. South Indian temples :

1. Twelve kinds mentioned in Suprabhedāgama.
2. Twenty kinds mentioned in Isāna-S-G-Paddhati. [Table I C (IV and V)].
3. Thirty two kinds mentioned in I-S-G Paddhati. [Table I C (II)[1].

These three perhaps were temples before the rise of the Dravidian style—or earliest Drāviḍa temples of Maya school—Pre-Sixth century A. D.

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4. 96 kinds (including no. 2 and 3 above) of temples mentioned in I-S-G-D-Paddhati, Vaikhānasāgama, Atri Samhita—Before Dandin (7th century) to 11th century.

5. Temples up to twelve-storeyed ones mentioned in the Mayamatam and I-S-G-Paddhati [Table I (IV B)]—Sixth to 11th century A.D.

6. Temples upto sixteen-storeyed ones—as in Kāsyapa Silpam—11th to 14th century (before Silparatnam).

7. Temples mentioned in the Manasara—(Latest).

Unknown varieties——(a) Vesara temples. (Before 11th century)

(b) Bhumija temples. (Before 11th century)

(c) Andhra temples.

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CHAPTER XVII

Relation of the Manasara with other treatises on Indian architecture

In the "Indian Architecture", Dr. P. K. Acharya writes as follows :—"In view of these facts, we venture to expect that the reader may be inclined to consider more seriously the other evidences which are undoubtedly more authenticated and substantial, including those regarding the connection of the Manasara with Matsya-Purana (450 A. D.) on the one hand, and the Bṛihat-Samhita (550 A. D.) on the other. On this assumption we shall perhaps be justified in placing the Manasara before the Bṛihat-Samhita and somewhere close to the Matsya-Purana." The various arguments adduced by Dr. Acharya for placing the book in the Gupta period will be discussed in the next chapter ; but as regards his contention that, "there seems to have been a relation of indebtedness between the Manasara, on the one hand, and on the other hand, the architectural portions of the Agni-Purana, the Matsya Purana and the Brihat-Samhita" (p. 160), I most respectfully differ from the learned author, for reasons noted below.

(1) First, as regards the comparison of building types in the Manasara with those in the Puranas and the Bṛihat-Samhita (Indian Architecture p. 110 ff).

Acharya's comparison proves that a very few names of buildings in the Manasara are similar to those in the Puranas or the Bṛihat-Samhita. But notice has not been taken of the fact that the buildings which agree in their names do not, at the same time, possess the same features. Thus, the temple, called "Meru" in the Puranas, has 12 or 16

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storeys ; whereas, in the Manasara, the temple called 'Meru-Kānta' is a three-storeyed building. 'Kailāsa' in the Puranas is eight-storeyed, but in the Manasara, it is described as three-storeyed. Similarly 'Vṛitta' is an one-storeyed building according to the Bṛihat-Samhita, while "Vivṛita" of the Manasara is a nine-storeyed building. It is, therefore, not a fact, as Acharya thinks, (p. 168), that the names "Meru, Vṛitta etc. of the Bṛihat-Samhita are improved forms for "Meru Kānta", or 'Vivṛita" of the Manasara. Meru temples are, therefore, quite different from the 'Merukānta" temple and so also is the case with "Vṛitta" and "Vivṛita" temples.

Thus it is clear that the building types of the Manasara and the Puranas do not agree. Though some of the names are similar, the temples do not agree in their characteristics. The names are not quite meaningless but they indicate the features of the temples. (See Table I D).

(2) Secondly ; as regards the method of classifying the buildings.

"The broadest division into storeys under which the Manasara describes the buildings in 12 or 13 chapters", is not to be found in either the Puranas or Bṛihat-Samhita. This difference, Mr. Acharya tries to explain (p. 119) by saying that this division has lost its prominence because Bṛihat-Samhita or the Puranas are non-architectural works. But the absence of this method of classification is not peculiar to the Puranas or Bṛihat-Samhita ; it is not to be found in the Visvakarmaprakāsa, Samarāngana-Sutradhāra, Hayasirsa-pancharātra etc. which are undoubtedly architectural treatises. Then, again, even the Agni-Purana which, according to Acharya, perhaps refers to the Manasara, follows a system of classification not even known to the Manasara.

Thus, these different methods of classification and the difference in features of temples even having almost the same names, are great obstacles on the way of establishing a

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relationship between the Manasara and the Puranas or Bṛihat-Samhita.

(3) Thirdly, as regards the mouldings of the pillars and the five orders of columns.

Acharya himself shows that only three names of mouldings of the Manasara agree with those in the Puranas or Bṛihat-Samhita. This similarity may be explained by the fact that these names were current all over India wherever these mouldings were used. On the other hand, most of the mouldings of pillars, bases or pedestals mentioned in the Manasara are not to be found in the Puranas or Bṛihat Samhita.

The criteria of division of the pillars are the same in the Manasara and the Puranas, but how to explain the most important fact that the names of the five orders (or varieties) of columns in the Manasara (Vishnu-Kānta, Rudra-Kānta etc.) differ from those in the Puranas (Ruchaka, Vajra etc.)?

Again we find that many of the treatises such as the Maya-matam, Manasara, Silparatnam etc. describe in details the various classes of pedestals, bases etc. This system of classifying the bases is not to be found in any of the Puranas or the Bṛihat-Samhita. This cannot be explained by the non-architectural character of the latter books. For we find that many of the Agamas, evidently not architectural treatises, and the Isānasivagurudeva-Paddhati, another book of religious character, contain these classifications, whereas the Visva-karmaprakāsa and Hayasirsapancharātram, both architectural in character do not contain these things. (See Chap. XIX).

These considerations of the points of difference (viz. of building types, methods of classifying buildings, names of mouldings and pillars, classification of bases and pedestals etc.) between the Manasara and the Puranas or Bṛihat-Samhita or several other works, led me to conclude that the Manasara mainly deals with one school (viz. South Indian style of

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architecture) and the Puranas or Bṛihat-Samhita etc. deal with another school.

We know that storeys form the most important characteristic feature of the Dravidian temples. Therefore, the stress, given in the Manasara classification of buildings, on storeys indicates that the Manasara is a treatise on Dravidian temples, incidentally referring to other schools. This is borne out by the Samarāngana-Sutradhāra where this division into storeys has been done only with regard to the Dravidian temples (Chap. 62), whereas in the so many other chapters dealing with building types (Chapters 55 to 63), the method is altogether different. The pedestals and bases have also been classified in this book (Chap. 61) only with regard to Dravidian buildings and the names of various classes of pedestals are almost similar to those in some other books. The difference in the names of mouldings in the Manasara and the Puranas and in the names of the pillars therein may thus be explained by assuming that these mouldings and pillars were used only in the Dravidian temples which was the main subject matter of the Manasara. Thus the Manasara was a treatise on the South Indian architecture; while the Puranas and Bṛihat-Samhita refer to the architecture of some other style viz. the Nāgara and others. The points of similarity between the Manasara and the Puranas are outnumbered by the points of their difference. Thus no relationship can be established between the Puranas and the Manasara from the comparison of the subjects so long discussed.

(4) Similarity as regards the subject matters must be explained by the fact that both the Manasara and the Puranas were based on earlier original texts which followed the universal traditions of the Vāstu-works of India.

(5) The omission of the various schemes of ground plan, except the two most common, need not prove indebtedness. The Bṛihat-Samhita could not in so short a space contain all the schemes. Manasara, an avowedly architectural work and so

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elaborate in other details, ought not to have omitted the other schemes. Therefore if this proves indebtedness of one, it must be said that the Manasara is the debtor, and not that "Varahamihira faithfully followed the Manasara ".

(6) Varahamihira's omission to refer to the Puranas or the Puranas not referring to Varahamihira cannot prove indebtedness of any one to the other. This is a negative proof. Moreover both the Puranas and Varahamihira had their materials from original Vāstu-works and not from compilations. The Matsya Purana quotes the names of authorities and calls them "teachers of Vāstu", and in this list Varahamihira cannot obviously find a place, for, surely, Varahamihira was not a teacher of Vāstu. Varahamihira, again, does not mention his authorities exhaustively. His "Manvādi" might or might not include the Puranas.

(7) Similarity in Verses and Chapters cannot prove indebtedness. Both the Manasara and the Puranas confess that they took their materials from earlier works. These works must be sought out before the originality or indebtedness of the later writers is asserted. Mr. Acharya says, in this connection (p. 167), "Such a relation is untenable between the Matsya Purana and the Bṛihat-Samhita unless however, we choose to suppose that there might have been an unknown authority or some floating tradition, by which these treatises have been influenced in the same way.....but without any knowledge of one another. But I have failed to satisfy myself with such a hypothesis ". But why call these authorities unknown ? They are referred to in those books. Moreover we cannot say that the traditions were floating. India had writers on Vāstu before the Puranas, Brihat-Samhita and Manasara were written. The similarity between the Puranas and the Arthasastra proves the existence of these traditions and the works on Vāstu before at least the 1st Century A. D. (if not 4th century B. C.).

(8) The want of any reference in the Manasara to the

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Bṛihat-Samhita or the Puranas is again a negative proof. Moreover, as shown above, the Manasara is a South Indian work incidentally referring to the other schools. So the omission of reference to the Puranas or to Varahamihira need not be taken seriously at all. If such omission really proves anything, why is the Manasara not referred to in the Samarāngana Sutradhāra of the 11th century and in the Silparatnam of the 15th century ? Is Manasara then a later work than these ?

(9) Mr. Acharya has quoted a verse from the Agni Purana to show that the Manasara has been referred to in the former work. The passage is :

"Tadūrddhvantu Bhavedvedi Sakanṭhā. Manasārakam" (p. 169)

Dr. Acharya proposes to read "Mānasarakam" or "Malasārakam" for the last word in the passage, but prefers the first reading, on account of some grammatical difficulties he finds in case of the second reading. But the real reading of the word is obvious from another similar passage found in the Agni Purana (Cal. Edition Chap. 104, verse 11) which reads "Tṛitîye Vedikā tvagneḥ Sakanthomalasārakaḥ". The word, therefore, is not "Malasārakam" or "Mānasārakam" but either "Āmalasārakaḥ" or "Amalasārakaḥ". In the first passage, therefore 'Sakanṭhā' should be taken together with the last word, forming a compound word, which does away with the grammatical difficulty also. The first passage therefore means, "Above the 'Sukanāsā' should be the Vedi and the Amalasāra furnished with the neck". 'Amalasāra' is the famous ornament on the top of temples and is also known as "Āmalaka". That the word is Amalasāra is evident also from the following Verses :

(1) "Vedyāścopari Yaccheṣam Kanṭhaścāmalasārakaḥ" (Mat. P. 269. 13.)

(2) "Sukanāsāni prakūrvîta tṛitiye Vedikā matā ||

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Kaṇṭhamamalasāram ca Caturthe parikalpayet" (Visvakarma-prakāsa Chap. 6—Verse 73).

(3) "Tadûrddhvam tu bhavedamśaḥ Kaṇṭha=śchāmala-sārakān".

(Hayasirsapancharātra quoted in the Haribhaktivilāsa Chap. 20).

(4) "Caturthe punarasyaiva Kaṇṭhamāmulasādhanam"

(Garuḍa Purana Chap. 47. verse 5).

In this verse, the word is again misread ; but the "Ā" and the "la" are quite clear. That in the Agni Purāna (Cal. Edition) "la" is sometimes read as "na" is clear in another place—'Lâṭa" has been explained as "Nāṭa" (ch. 104. 21½.)

Thus Mr. Acharya's attempt to connect the Mānasara with the Agni Purana cannot stand. In fact I have shown in another place (Rupam Jan. 1926 and also Chap. XIII) that the chapters on architecture in the Agni Purana probably were based on the Hayasirsapancharātram. The above passage quoted from the latter work also goes to prove this.

It is, therefore, evident that on no account can a relation be established between any of the Puranas or Bṛihatsamhita and the Manasara. The similarity that really exists between these books is due to the prevalence all over India of common architectural traditions which may be called the fundamental principles of the Indian Vāstu-Vidyā, and also to the indebtedness of all the available treatises to earlier works which are now lost to us, perhaps for ever. But the nature of those has already been discussed.

In conclusion, I think Acharya has given somewhat more importance to the Manasara than what is justly due to it. It is undoubtedly the most elaborate of all the available treatises on architecture but surely this was not the standard work in an early age. Kasyapa and Maya appear to have been more popular authorities. Both of them have been mentioned in the Silparatnam and the Isānasiva-Gurudeva-Paddhati. Several

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passages attributed to Maya in the latter work have been discovered by me in the printed text of the Mayamatam. Many passages in the Silparatnam are almost identical with passages in the Mayamatam. Neither of these two books, however, refers to the Manasara nor is it referred to in the Samarāngana Sutradhāra.

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CHAPTER XVII

Date of the Mānasāra

We shall now discuss the date of the Mānasāra that is extant nowadays. We have already shown that the book could not have been written before the 11th century. But as Dr. Acharya places it in the Gupta period (450 to 550 A. D.) we shall discuss here all other grounds which have led me to reject the date proposed by Acharya.

(1) A late date for the Manasara is apparent from the fact that the Manasara refers to thirtytwo authorities consulted by the author. Out of these thirtytwo authorities or works, twelve or thirteen only are known to us from other sources. The remaining twenty such works or writers appear to be later writers of Silpa works, later than the available texts discussed above.

(2) The existing Manasara refers to the word 'Mānasāra' as the name of the book, of an earlier work of that name and also as the name of a sage (or writer on Vāstu Vidyā). This is certainly a great confusion which has not been explained by any modern writer including Acharya. I think we can explain this confusion only if we take this work to be a very late compilation of another book called the 'Mānasāra[158]. This late compilation was made at a time when the meaning of the word 'Mānasāra' was forgotten by the general public. The Manasara mentions several other sages with the word 'Māna' before their names. E. G. Māna-Sāra, Māna-Kalpa, Māna-Bodha and Māna-Vid. I think these are not names of sages but of works, as is evident on their faces. All these really mean "a work which gives the essence of Māna or from

(158) The early 'Mānasāra' might have been existing before the 10th century or earlier. The original work of Agastya (Māna) must have been a very ancient work.

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which knowledge of Māna may be acquired". The real difficulty is about the word Māna. This may mean 'measurement' or the name of Agastya (see Sayana's commentary on the Rigveda referred to by me—Chap. II). The works, therefore, may mean 'a work on measurements (of architecture)' or a "summary of Agastya's work". Agastya was acknowledged as a great authority by all South Indian writers on Vāstu including the Manasara. When the Manasara referred to an early Manasara and other works with prefix 'Māna', the meaning of this word 'Māna', was confused. The Mānasāra therefore naturally refers to these early summarised versions of the work of Agastya as names of sages, and to the work itself also as a Handbook of (architectural) measurements (Māna). The word 'Mānasāra' might really be the name of a person, as the name of a king of Malwa was. But there is nothing to connect this 'Mānasāra' with the king of Malwa of that name, except the similarity of these two words. But Māna-Bodha, or Māna-Vid etc. cannot be explained as names of persons. On the other hand, the explanations given above by me will prove that the edited Mānasara was a very late compilation of Vāstu Sāstras based on various other works, perhaps of the Agastya school[159]. It was done at a time when the word 'Māna' as the name of Agastya was forgotten by the people ; but they remembered that the earlier works 'Mānasāra, Mānavid, or Mānabodha' all were connected with the names of a sage. Hence the Mānasara also explained the words as names of sages[160].

([159]) The available work of Agastya called the Sakalādhikāra says that it was written by Agastya under the founder of the Pandya Government. The Manasara might have been a later compilation under either the Pandyas or Cholas.

([160]) In the list of historical architects in Acharya's Dictionary we find the name of an architect named Mana (1428-29), grandson of Visāla. The Mānasara also refers to a Visāla as an earlier authority. I do not know if the name Mana, here, may be read as Māna, which will place the Mānasara in that case to the 15th century. That may also explain why the Mānasara is not mentioned by the Silparatnam.

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(3) The relation of the Manasara with the Bṛihat Samhita, the Puranas, the Agamas and other South Indian Silpa texts like the Mayamatam etc. which Acharya tries to establish in his book, cannot be accepted. I have already discussed this partially in the foregoing pages and also in the last chapter (the paper read before the Oriental Conference). I have shown that the classification of temples in the North Indian texts—the Puranas and the Bṛihat Samhita, or even in the Mayamatam is not similar to that found in the Manasara. I have also shown that the Agni-Purana could not have referred to the Manasara at all. I may here point out again that the Manasara shows acquaintance with seventeen-storeyed structures (which was unknown to most of the other writers), describes a larger number of temples (98) than what is found in other works, larger number of pedestals, bases, pillars, mouldings thereof and Mandapas. This does not show that being the best of the standard works, it has referred to so many kinds and details of structures ; it also means that it was of a time when Indian architecture had assumed so many elaborate forms. The frequent use in the Manasara of the word 'Kānta' after the names of structures, not found in so large number in any other texts, also points out that these names were given most mechanically and indicates a late period for the composition of the work.

(4) The detailed treatment of the Manasara cannot be again explained by saying that it was dealing with buildings of all parts of India, comprising the Northern, Southern and Eastern styles. In fact, the book does not deal with all the styles of Indian architecture, but simply with the South Indian, with incidental references to that of other countries. This is quite evident from the comparison of the Manasara classifications of temples, Mandapas and pillars with those in the other Northern and even South Indian works on Vāstu (See Table).

The fact that the 'Āmalaka' (the crowning piece of all North Indian temples) is not mentioned in the Manasara also

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points to that fact. Acharya tries to explain it by saying that the Murdhni-Ishṭaka mentioned in the Manasara serves that purpose. The form of the 'Murdhni-Ishṭaka' was certainly quite different from that of the Āmalaka which is mentioned in all North Indian Silpa texts and found in all Indian temples built in the North Indian style. The South Indian texts refer to the crowning member of the temples as the 'Sthupi', the form of which may be guessed from what we actually find on the top of the Dravidian temples (the dome-like piece). The Āmalaka certainly is a feature which clearly distinguishes the North Indian style from that of the South[161]. Its omission not only in the Manasara but in all allied works undoubtedly proves that these works are dealing with South Indian style of architecture.

(5) Reference to Buddhist buildings in the Manasara, though in a cursory way, led Acharya to think that the Manasara was written at a time when Vaiṣnavism, Buddhism and Jainism flourished side by side in India i. e. in the Gupta period. This fact can be explained in various other ways, without placing the book in the Gupta period.

Firstly, the present Manasara is based on many earlier Vāstu works, some of whom were certainly composed in the Gupta period (as explained by me before) and therefore must have contained references to Buddhistic structures. The Manasara was simply including those references in it.

Secondly, it was not simply in the Gupta period that these three religions were flourishing in India. Even if the book was compiled between the 8th and the 10th century, the author might have been acquainted with such a state of affairs,

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([161]) This is also proved by a definite reference to it in the Hayasirsapancharātra (Ch. 18) while discussing characteristics of Drāviḍa temples. "Amalasārakasthāne.....tesām Adhokmukhî"

The word indicating what was to be there in place of the Amalasāraka is lost. But this shows that there was no Āmalaka on the Dravidian temples.

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because even then, these three religions were flourishing at least in Eastern India under the Palas of Bengal.

Thirdly, it must be noted that Buddhism did not really disappear from South India at the time of the Rashtrakutas as Dr. Acharya thinks. That traces of it existed even in the early 11th century is now known from the fact that Rajaraja the great, the Chola king, allowed king Chuḍāmani Varman of Kedah to construct a Buddhist temple at Negapattam and that even Rajendra Kulottunga patronised several Buddhist temples at that place. This, I think, connects the author of the Manasara more with the Chola kings than the Guptas, because if written under the latter dynasty, references to Buddhist buildings would not have been so cursory as they are in the Manasara. Moreover, a few vestiges of Buddhism are found even in the Vijayanagar kingdom. From an inscription we know that the Buddhists at Belur worshipped Kesava as Buddha. There was also a Buddhist temple at Tiruvilanturai as mentioned in a Kumbakonam Inscription[162] (no. 292 of 1929).

Acharya further says that the book was written under the patronage of Vaiṣnava kings, and at a time when Vaiṣnavism was the predominant religion. This also, I think, connects the Manasara with a period after the rise of Ramanuja (11th century) and with the Cholas and the later Pandyas rather than the Guptas. Moreover, there is no doubt that the author of the Manasara was a man of South India and dealt in his book with the South Indian architecture which had assumed most elaborate forms under the Cholas and later Pandyas and the Vijayanagar rulers. The many-storeyed temples surrounded by five walls and courtyards, with elaborate Gopurams which the Manasara describes, may be the later South Indian

(162) Indian Historical Quarterly XIII (1937) p. 259-60. The first inscription further proves that the Manasara was written at a time when the Buddha was regarded as an incarnation of Viṣnu, as Acharya himself admits (p. 190)

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temples built under the Cholas, the Hoyasalas, the Yadavas, the Pandyas and the rulers of Vijayanagar. I may thus conclude that the published recension of the Manasara could not have been written before the 11th century A. D, and I think after that century, may be even in 15th century as it is not referred to in the Silparatnam.

If we regard the present Manasara as a later compilation, it may be argued that the original Manasara might have been written in the Gupta period as Dr. Acharya suggests. It is really very difficult to either prove or disprove it. But taking into consideration the elaborate treatment of architecture in the Manasara, it is still very difficult to place the book in the Gupta period. The work deals with the Dravidian style which could not have originated much earlier than the 6th century. A. D. It is, however, probable that the original Manasara like the Mayamatam and the Kasyapasilpa was also a later (post-sixth century) recension of Agastya's original treatise on architecture, which undoubtedly must have been a very early work, earlier than even the Gupta period. That there was really an earlier Manasara is evident from not only the published Manasara referring to an earlier work of that name, but also from a fragmentary Ms. of the Maya Sāstram (mentioned by Dr. P. Bose—Principles of Silpasastra) which also takes the Manasara as an earlier authority. In fact, this is the only book which refers clearly to the Manasara as an earlier authority. Dr. Acharya's contention that all available works on Vāstu Vidyā are indebted to the Manasara cannot be upheld. The available published Manasara is undoubtedly a later 'recension of recensions'.

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CHAPTER XIX

Relation of Mānasāra with Vitruvius

We shall now discuss the relation that Dr. Acharya traces between the Mānasāra and the work of Vitruvius the Roman architect, and between the five Greco-Roman orders and the five orders (?) of pillars described in the Mānasāra.

The similarity between the Manasara and the work of Vitruvius might not really have been accidental. But what I want to point out is that this similarity does not indicate the indebtedness of the one to the other. If there was any indebtedness, it was not between the Manasara and Vitruvius, but between Vitruvius and Indian Vāstu Sāstras which, as I have pointed out elsewhere, existed in a full fledged form in India from at least the Post-Mauryan period. The relation of India with the Greco-Roman world in the early centuries of the Christian era will thus explain the similarity of the Indian Silpasāstras with the work of Vitruvius. The Manasara having been based on earlier works on Vāstu has naturally inherited that similarity with Vitruvius. Manasara was not the first work of its kind, nor was it based on merely floating traditions. There were, before it, innumerable works on Indian Vāstusāstra, both in North India and the South. The matters dealt with in the work of Vitruvius were similar to those discussed in all the Indian Silpasāstras and not in the Manasara only. Whether the Indian works were indebted to Vitruvius or Vitruvius was indebted to the Indian writers is a difficult problem to solve. But regarding this also I may suggest several points which might prove the truth of the latter proposition.

(1) Though I have said above that the Indian works on Silpa must have existed in the 1st century A. D., I have shown elsewhere that 'Vāstuvidyā' in some form existed in India in

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still earlier periods—at the time of the composition of the Arthasastra, the Jatakas, the early portions of the Epics, the Gṛihyasutras and even the Vedas. It was definitely known at the time of the Buddha. This shows that the science of architecture arose in India long before Vitruvius. This raises the presumption that Vitruvius might have learnt this Indian Vāstu Sāstra.

(2) In order to show what was the nature of the Indian Vāstu Vidyā in that early period (Ch. XI—XII) which might have been known to Vitruvius, I may point out that "Choice of healthy situation" and "Forms of houses suited to different ranks of persons" which are dealt with by Vitruvius in Chapters III and VI—VII respectively in his book are matters which were definetly known to the early Indian Vāstuvidyā. As we have not yet got the works on Indian Vāstuvidyā of that early age, a more detailed comparison is not possible. But the priority of the Indian Vāstuvidyā to the work of Vitruvius is unquestionable. I therefore believe that, as Vitruvius does not mention any early authorities for his system, he was quite likely indebted to the Indian Silpa works.

In this connection, it is interesting to note that a temple was dedicated to the Roman Emperor Augustus at Cranganore in South India not long after the work of Vitruvius was written (in about 25 B. C.). Strabo also mentions that an embassy was sent to Emperor Augustus by a Pandya king in 20 B. C. Do these relations of the Deccan with the Roman Empire indicate that Vitruvius really learnt the Indian Silpasāstras of the Southern school to which the Manasara also belongs or is it due to the fact that the Drāviḍa school also existed in the Gandhara region, of which Gandhara school was a later development (See Ch. XXVII)?

Further light may be thrown by the similarity that Acharya discovers between the component parts of an Indian pillar and those of the Greco-Roman pillars. The component parts

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of the Greco-Roman orders are eight in number. According to Acharya, the Manasara refers to five mouldings (really 47, if the mouldings of the pedestal, base and entablature are taken into consideration), the Suprabhedāgama describes seven and the Kiranatantra refers to eight. The North Indian texts, like the Matsya Purana and the Bṛihat Samhita, however, refer to eight mouldings of the pillars. [I think the Bṛihat Samhita and Kiranatantra refer to 8 mouldings including the capital and the entablature] (See discussion at the end of this Chapter). This indicates that the mouldings in the Greco-Roman orders are similar more to those of Northern India than to the Southern. The Kiranatantra, however, I believe, was a North Indian work of a very early period. From this I may conclude (1) that the Manasara, giving the largest number of mouldings to a pillar, was a later work than the others mentioned above, and (2) that, Vitruvius was acquainted with the earlier texts of the Indian Silpasāstras, rather than with the Manasara (texts of the 1st century B. C. either Northern or the Drāviḍa).

Dr. Acharya futher attempts to find out similarity of the five Greco-Roman orders (Doric, Ionic, Corinthian, Tuscan and Composite) with the five orders of Indian columns. (Brahmma Kānta, Vishnu-Kānta, Rudra-Kānta, Siva-Kānta and Skanda Kānta of Manasara of the southern school, or Ruchaka, Vajra, Pralînaka, and Vṛitta of the Matsya Purana and the Bṛihat Samhita, the Northern Silpa texts). But he himself points out that in India the names of these five orders have varied in various treatises (The Suprabhedāgama, another book of the South mentions the names as Sri-kara, Chandrakānta, Saumukhya, Priyadarsana and Subhankari) whereas the names of the Greco-Roman orders have been left unchanged; and that in India, the names were based on the shape of the columns[163] while in Europe, the origin of the names is traced

(163) This should be compared with the words Nāgara, Drāviḍa and Vesara which also indicate varieties of structure and not orders.

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to historical Geography. These points of difference have, therefore, led me to think that the five names of Indian pillars do not really indicate five orders as the Greco-Roman terms indicate. The Indian names indicate only different kinds or varieties of pillars within the same order (North Indian or South Indian). The differences, that Acharya notices, in the Indian names are due to the fact that the Northern texts (Mat. P. and Bṛi. Sam.) deal with the names of pillars built in the style or order of North India; and the Southern texts deal with the names of the South Indian pillars. The Indian orders are, therefore, to be found not in the names of these varieties of pillars but in the orders already mentioned by me in the foregoing pages, [The Nāgara, Drāviḍa, (doubtfully, Vesara), Lāṭa, Vairāṭa, Bhumija etc.] which like the Greco--Roman orders were based on Historical Geography and indicated points of difference in style and not simply shape. The various Indian styles had so many things common to them that they should really be called various 'orders' and not styles. Coomaraswamy rightly says that these terms indicate different Indian orders as of Greek architecture.

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APPENDIX D

Mouldings of Pillars.

Dr. Acharya thinks that the Bṛihat Samhita and the Kiranatantra refer to 8 mouldings of a pillar (1) Vahana, (2) Ghaṭa, (3) Padma, (4) Uttaroshṭha, (5) Bāhulya, (6) Bhāra(hāra) (7) Tulā and (8) Upatulā (Ind. Arch p. 127) (Dictionary, pp. 649-650). But I think that the names of the mouldings cannot be what Dr. Acharya takes them to be. The word 'Bāhulya' which is taken here as a moulding is not so, nor does it mean 'projection' as he has written in his Dictionary (p 440). But it means 'thickness' and 'width' of the pillar. That this is the real meaning is also apparent from the translation of the Bṛ. Sam. passage made by Kern (Dictionary p. 650 & 440). Dr. Acharya takes Kern's translation as untenable and Kern himself translated the passage with the remarks "All this exceedingly vague". The translation as given below, I think, will show that these books were not vague at all. First let us take the passage from the Bṛihat Samhitā (53. 29).

"The whole (length of the) pillar should be divided into 9 parts, one part will be (the height of) the (1) Vahana, one part of the (2) Ghaṭa, one of the (3) Padma, the same of (4) Uttaroshṭha, thus giving one part (of the whole height) to each of them (Verse 29.)" The remaining parts will be the shaft. This passage refers to the height of the mouldings. Then the width of the mouldings on the capital and the entablature is described thus :—

"The Bhāratulās, which are one upon another, should be equal (in width) to the (width of the) pillar. The width of the Tulās and the Upatulās will be less by $\frac{1}{4}$ and $\frac{1}{4}$ (i. e. the width of the Tulā is $\frac{1}{4}$ less than the width of the Bhāratulā or the pillar, and the width of Upatulā again is $\frac{1}{4}$ less than the width of the Tulā)." or "The width of the Bhāratulās will be equal to the (width of the) pillar. Above these will be the Tulā

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and the Upatulā which will be (in width) less by $\frac{1}{4}$ and again less by $\frac{1}{4}$.

This translation will indicate that the pillar proper will have only 4 mouldings (1) Vahana (2) Ghaṭa (3) Padma (4) Uttaroshṭha. Above that will be the entablature which will be many in number. Above that will be the Tulā and above that the Upatulā. The number of mouldings is further clear from the Kiranatantra passage which may be also translated below thus :—

"Dividing the (height of the) Stambha into 9 parts, should be made (1) Udvahana, (2) Ghaṭam, (3) Kamalam (i.e. Padma), and (4) Uttaroshṭha. But each should be constructed (in height) with one part (of the 9 parts)." Here we find exactly the same four mouldings as in the Bṛihat Samhita. The Kiranatantra here does not speak of the Bāhulya and the entablatures. This is further supported by the Matsya Purana (255.5-6) passage which may be translated thus :—

"By one ninth part (of the height) of the Stambha (will be) the (1) Padma (2) Kumbha and (3) Antara (Dr. Acharya writes 'Astara' or Āstara) (Aṁśena' in singular indicates that each should be in height $\frac{1}{9}$ the height of the pillar). The Tulā (in singular) is said to be equal to the Stambha (i. e. in width, 'Bāhulya', which is not mentioned here). The 'Upatulā' should be less than that (i. e. the Tulā). This (i. e. this diminishing of the width) is everywhere by $\frac{1}{8}$ (a new proportion is set here, not found in the Bṛihat Samhita) or by $\frac{1}{4}$ (as in Bṛihat Samhita). In other Bhumis (i. e. above the ground floor) this (diminishing of the width of Upatulā) should be less by $\frac{1}{4}$ and again less by $\frac{1}{4}$". (i. e. in second storey the Upatulā should be less by $\frac{1}{4}$ than that of the ground floor, in the third storey, the Upatulā should be less by $\frac{1}{4}$ than that of the first floor and so on. This is indicated by the repetition of the word "Hīnam Hīnam"). The 'Bhāratulās' are not mentioned here. The absence of Bhāratulās in the Matsya Purana and the plural number in 'Bhāratulānām' and

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'Uparyuparyāsām' in the Bṛihat Samhita may also suggest that Bhāratulā included 'Tulās', and the Upatulās ; or they may also mean that there were to be many 'Bhāratulās'. Similar is the case with Tulā and Upatulā which might be many according to Bṛihat Samhita but one in Mat. p. (see also Samarāngana below).

Thus if we consider all the mouldings of the pillar including the base, shaft, the capital, and the entablature, we find in these north Indian texts the following 8 mouldings :—

(1) Vahana or Udvahana.
(2) Ghaṭa
(3) Padma
(4) Uttaroshṭha
(5) The shaft (not mentioned clearly but indicated)
(6) Bhāratulās
(7) Tulā
(8) Upatulā

The Matsyapurana mentions only six mouldings including the entablatures, the Vahana and 'Bhāratulā' being not referred to. The existence of Bhāratulā is further corroborated in the Visvakarmaprakāsa (ch. 2. 169). The verses in it are almost same as in the Kiranatantra and the Bṛihat Samhita. That in these verses regarding the Bhāratulā, Upatulā and Tulâ, the word 'Bāhulya' means width and thickness is perfectly clear from a similar passage in the Samarāngana (ch. 28. verse 42).

"Stambhāgrena samā Kāryā Vistārasthaulyatastulā" which means "The Tulā shall be made equal to the upper part of the Stambha in width and thickness". Here Tulā stands undoubtedly for the Bhāratulā. The Tulā and Upatulā have got other names according to the Samarāngana Sutradhāra.

The same mistake has been committed by Dr. Acharya in the meaning of the word 'Bāhulya' regarding the 'Sākhās' of doors (Dictionary p. 440). Here too the word 'Bāhulya' does not mean a projection but 'depth'. (See Chap. XXIV).

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CHAPTER XX

The Two Principal Schools of Vāstusāstra

It has already been shown that from the Vedic period there were two schools of architecture in India—the Aryan (popularly called N. Indian) and the Drāviḍa (generally called Southern ; but, as I have shown, there was perhaps a Northern branch in the North-western, Northern and perhaps Eastern parts of India). There were writers in both the schools but their works have not come down to our times. Some quotations from their works may be found and also perhaps some later recensions of their work. Whatever difference might have been in the two schools in a very early period, the pre-Vedic, Vedic and later Vedic period, due to the difference in the structures of the Aryans and the non-Aryans, I have shown that upto 6th century A. D. there was perhaps very slight difference between the two schools. The matters discussed in the works of both the schools were very similar; they followed the same principles (See Chap. on 'Principles of Vāstuvidyā') but might have disagreed in the measurements and the forms of a few structures (as the Satapatha Brahmana does about the Smasāna). As we have got neither these structures, nor the works of the pre-sixth century A. D., we cannot definitely say anything further regarding this matter. This is supported by the fact that in the Vedic period, the view of Nagnajit regarding the construction of the fire-altar is not accepted on only a slight ground viz. width of the structure. The Arthasastra regulations which were perhaps of the Drāviḍa school are found almost in same form in all later Northern treatises and in the Puranas of the North. The names of the temples of the two different schools were also perhaps similar, though might not be exactly so, as is known from the comparison of Puranas with some of the Agamas. The views of Maya and Nagnajit

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as quoted in the Bṛihat Samhita indicate also slight difference (of measurement only) between the two schools. As I have hinted, it was a period (beginning of which might be even in the Vedic period[164]) when there was already a mixture between the Aryans and Dravidians, and the culture of the one was being assimilated by the other. The buildings of Northern and Southern styles might have differed very little from each other before the 6th century A. D. and so did the Vāstuvidyā of this period. So far we have been able to gather, the pre-sixth century writers of the Drāviḍa Vāstu-Vidyā, some of whom might have flourished even before the Arthasastra, were Brahmmā, Sakra, Sukra, Maya, Bhṛigu, Vṛihaspati, Nārada, Nagnajit and Agastya.

But from the 6th century, or a bit earlier, we find the rise of the new style of architecture in the Deccan (and also some branches of North Indian school, the Nāgara and others which we leave for the present). As discussed already, new works dealing with South Indian architecture were now being written ; old works of Drāviḍa School were given new garbs and even several North Indian texts were adapted to the changed circumstances in the South and adopted by the Southern School. There is no doubt that from this period works were written in both the schools, which have now come down to us, and that from this time we notice a great difference between the two schools of the Indian treatises on architecture. Even then, however, the principles (common to both) followed before were still acted upon by both the schools. But in spite of it, the existing works may be easily divided into two groups—one belonging to the Northern School, the other to the Drāviḍa or South Indian School. This will be clear from the attached tables.

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(164) Even in the Rigveda, Rishis of the Asura kings are mentioned ; the Satapatha refers to construction of altar by both the Gods and the Asuras (the Aryans and the Asuras or Drāviḍas). The assimilation of the two cultures had therefore taken place before the latest limit of the Rigvedic period. (See Chap. XXVII.)

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We enumerate first the names of the available works of the two schools which have already been discussed. To the Northern school belong the Matsyapurana, Agni Purana Bhavishya Purana, the Visvakarma Prakāsa, the Bṛihat Samhitâ, some of the works of the Pancharātra school, the Tantras (Kiranatantra), the Hayarsirsa Pancharātra (of the Saura Kānda, the Vishnukānda and Samkarsana Kānda referred to in later works) the latest being the Samarāngana, the Viṣnudharmmottaram, the works of Mandana, (besides works of Pratishṭhā class of later periods—of Raghunandana, Vāsturatnāvali, Vāstu Pradîpa, Haribhaktivilāsa and some others, dealing mostly with religious aspects of the Vāstuvidyâ only). The list is not exhaustive. New works may be found afterwards and many Mss. are lying unknown.

To the Southern school I would place the Saiva Āgamas, the Vaishnava pancharātra works such as the Atri Samhitâ and Vaikhānasāgama, the Mayamatam, the Silparatnam, the Amsubheda of Kāsyapa and other Mss. of Kāsyapa's work, Visvakarma Silpa and Diptatantra, the Agastya (Sakalādhikāra), the Mānasāra, and the works of Sanat Kumara. The Silpa Samgraha, the Tantrasamuccaya and the Isāna-S-G-Paddhati also belong to this group. The Tibetan versions of Chitralakshana of Visvakarmā, Nagnajit and Prahlāda, which I have not been able to consult, I suppose, are similar to the Southern texts.

The works of these two groups, though agreeing as regards the subjects discussed (as shown by Dr. Acharya in his "Indian Architecture") differ in many vital respects from each other. Failure to recognise this fact has led writers on Indian Vāstuvidyā and architecture to fall into many errors. Dr. Acharya has tried to find out a similarity amongst all these works of both the schools from various view points. Similarity there is no doubt, but the points of difference are so many that we cannot say from the comparison, as Acharya has done, that all the available works were indebted to the

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Mānasara in some form or other. Some of the mistakes I have discussed already (Chaps. XIV to XIX). Many difficulties that scholars find out arise out of this neglect in recognising the existence of these two schools of Vāstuvidyā and the difference among the works of these two. We should, therefore, try to again place together (in different places they have already been hinted at) some of these points of difference between the works of the Nāgara and the Drāviḍa Schools. All the points of difference can only be found out if a thorough interpretation of all the works can be made, which has not yet been done by me or anyother scholar, the meaning of various technical terms being still not clear to us (in spite of Dr. Acharya's brilliant dictionary, which contains many errors).

I have already referred to the following points of difference :—

(1) System of classification of temples and names of the temples. (Division according to Tala in S. texts unknown to Northern ones).

(2) The reference to Āmalaka in the Northern texts and its non-occurrance in the Southern.

(3) Difference in the names of the component parts of a pillar and names of various kinds of pillars. (See Table).

(4) Use of the Suffix 'Kānta' in names of structures, only in the Southern texts.

(5) The 'Vesara' type of buildings unknown to Northern texts.

(6) System of classifying bases and pedestals (see Tables 3-4).

That these points of difference cannot arise out of the fact that most of the texts which (according to me) belong to the Northern school are fragmentary or religious in character or are mere summaries, has already been discussed in the chapter on the 'Mānasara's relation with other treatises'. The difference is fundamental, arising out of the two

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different types of architecture dealt with in the respective works. The Samar. Sutradhāra, the Hayasîrsa. P. etc. deal with architectural matters in detail. There are vital points of dissimilarity of these two works with the Southern texts. We, therefore, notice the other points of difference below :—

(7) Names of residential houses in the southern texts differ from those found in the Northern ones (see table). But the Silparatnam contains perhaps an earlier tradition similar to that of North India.

(8) So do the names of the Mandapas. The Visvakarma Prakāsa, the Matsyapurana and the Samar. S. describe 27 kinds of Mandapas under exactly similar names ; whereas the Mayamatam and the Manasara describe mandapas of similar names (Mayamatam contains many names not found in the Mānasara) ; and the Dipta Tantra, Suprabhedāgama, the Silparatnam and the I-S-G.-Paddhati form a different group in naming Mandapas of 12 similar classes (some of course not naming all of them). This also shows that the Mānasāra was not the only standard work in South India.

(9) As regards the Gateways of temples.

Though the word 'Gopura' is mentioned in all ancient Sanskrit literature in the sense of a Gateway of a city, it might have had a technical meaning indicating a special kind of structure at the gate. But none of the Northern texts refer to the Gopuram in connection with the temple gates (in Dvāravidhāna) which form important chapters in all these works. The 'Gopuram' as a special structure (different even from other similar structures on the Gateway) is mentioned only in the Southern texts[165] and are divided into different varieties with different names. The Mānasāra described twelve varieties of Gopurams, different from those in the I-S-G-Paddhati which

(165) I might suggest here that the terms Dvārasobhā, Dvārasālā, Dvāra-Prāsāda, Dvâra-Harmmya, Dvāra-Gopura or Mahāgopura did not originally refer only to their situation in the 1st. Courtyard, 2nd, 3rd, 4th, 5th courtyards respectively, but also to different structures of different forms (Mayamatam p. 167).

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perhaps in this matter also, as regarding temples, was following an earlier tradition. This is an important matter in which the treatises of the two schools differ. The details of Gateways are discussed in all North Indian texts but they omit the word 'Gopuram'. We know, in this technical sense, the word is used only in South India ; in North India the word used nowadays is 'Simhadvāra'. Thus it is that we account for the treatment of Gopuram only in Southern works and not in the Northern.

(10) Similarly regarding compound walls:—The Southern texts invariably refer to five walls around a temple. This is not mentioned in any of the Northern texts. Such compound walls are really found in South India only. Though North Indian temples are surrounded by courtyards and walls, I do not think there is any existing early North Indian temple with 5 courtyards, as in the South. This matter differentiates the Northern from the Southern texts.

[As mentioned by Dr. Acharya (p. 52) Vasantasenā's palace (in the Mṛicchakatika) was surrounded by seven courts. The Arthasastra prescribes three concentric walls around a fort. The Arthasastra, though perhaps describing South Indian architecture, may be, therefore, regarded as an earlier work than the Mṛicchakatika, the author of which also I think might belong to the Deccanese School. The Atri Samhitā, though prescribing 6 courtyards around a temple says that "three walls are uttama" (Atri Samhita IX. 36½).]

(11) Regarding the (Adhishṭhāna) Bases of temples :

This matter is described in details in all Southern works. The Samar. S., ostensibly a North Indian work, refers to these as Piṭhas ('Upapiṭha' means in Southern works the portion below Adhishṭhāna and so we may take Piṭha to be equivalent to the Adhishṭhāna) and describes five varieties of them in relation only to 'Drāviḍa' temples. Its omission in other North Indian texts, therefore, clearly proves that they were dealing with the Northern style and those describing them deal

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with the Southern order. The names of these Piṭhas in Samar. S. are very much similar to those found in the Manasara (See table of Adhishṭhāna).

(12) Regarding various mouldings.

As pointed out by me in another place (Ch. on Manasara's relation with other treatises) the similarity of the names of mouldings in all the available texts does not indicate the indebtedness of these texts to any one of them. This similarity arises out of the fact that those mouldings which are common to structures of both the North and South India bear the same name. The names of all mouldings, however, are not the same in both the northern and southern texts. The buildings of of the two orders were similar and also dis-similar in many respects regarding mouldings and hence there must be similarity and difference in the names of the mouldings. The difference between these mouldings will be apparent if we compare the description of a temple in the Northern texts with that of a temple in the Southern ones. We have already referred to one moulding i. e. the Āmalaka of the Northern texts and Sthupi of the Southern. The Shaḍvarga (i. e. Adhisṭhāna, Pādavarga, Prastara, Grîvā, Sikhara, Sthupikā) of a temple mentioned in southern texts was the principal features of a Southern temple, whereas, of nothern temples we may notice the following features to be invariably mentioned in the texts of northern India ; viz. Janghā, Bhitti, Rathaka, Sukanāsā, Sikhara, Kanṭha, Amalasāra etc. Similarly, the mouldings of a pillar mentioned in the northern texts are different from those in the Southern. The innumerable mouldings of pedestals and bases of temples mentioned in Southern texts are altogether wanting in the Northern texts. Similarly, the 'Rathakas' of Northern temples are not mentioned at all in the Southern texts. Like the Āmalaka, the 'Rathaka's of Northern temples is certainly a very prominent feature distinguishing them from the Southern ones.

Thus from the comparison of various details dealt with in

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the works of the two schools, we cannot but be certain about the existence of two distinct schools in India from about the sixth century A. D. We cannot, therefore, really draw a comparison between all the available texts of the Vāstuvidyā, as done by Acharya. The similarity he has shown is merely superficial, and I have already accounted for this kind of similarity. The points of similarity can only be explained by assuming what I have said before, that the works of both the schools follow common traditions which are the fundamental principles of Indian Vāstuvidyā. I have already traced the development of these two schools from age to age and have already referred to the meagre information that we have gathered of the other schools of Indian architecture and the treatises thereof, which were undoubtedly slight modifications or elaborations of the Nāgara and the Drāviḍa schools.

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CHAPTER XXI

The Underlying Principles of the Vāstu Vidyā

A study of the works on architecture, both of the Northern and the Southern schools, leads to the conclusion that architecture in India was based on several underlying principles. Havell's contention that everywhere in India, architecture followed the one Aryan tradition is, therefore, undoubtedly correct, at least so far as the canons of architecture are concerned. It was according to these principles that the regulations regarding the various structures were laid down. To modern eyes, many of these principles may appear as mere superstitions having no direct bearing on actual methods of construction, nor having any utility whatsoever in architecture ; the mystic value of the ceremonials will not appeal to the present-day world ; but to the ancient Indians these principles were so valuable as to exert immense influence on their architecture for a period covering several centuries. These principles, wherever followed, marked out the architecture in India as purely Indian ; for it was on these that the individuality of Indian architecture rested.

These principles embodied in the various treatises may generally be said to be as regards the following matters :—

(1) The surrounding atmosphere of the structures.

(2) The quality of the soil where a building stands.

(3) The shape and other qualities of the site and the directions to which the building faces.

(4) The ground plan.

(5) The measurements to be used.

(6) The size of the various parts of a structure and the relative proportion between each.

(7) The results accruing on the builder or owner of a structure.

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(8) Classification of residential houses, religious structures, gateways, pillars and other various structures or mouldings.

(9) The sanitary arrangements in a house.

(10) The materials to be used.

(11) The decorative elements.

(12) The distribution of a land to its proper inhabitants and purpose.

(13) The planning of villages and towns.

(14) The temples and subsidiary structures around the main shrine.

(15) The technique used in house-buildings.

(16) The stability of the structures.

(17) The ceremonials and other mystic things related to Indian architecture.

The very first regulation in the Vāstu-Sāstras relates to the site on which a structure is to be raised. All the works agree in saying that the best site is one which has a vast sheet of water in front and trees and groves all around. The forts, cities and temples, all alike, should be situated in a land rich with natural scenery. This regulation undoubtedly springs from the Indians' inherent love of nature. The practical purposes served by this injunction are obvious in case of the forts. Thus Kautilya says: "The king may have his fortified capital in a locality best fitted for a Vāstuka (Vāstukaprasastadésé), on the confluence of rivers, on a lake or a tank" (Book II Chap. 3). In the Sukraniti, again, the capital is enjoined to be built "on a charming level ground, having mountains not far from the place, having water-courses extending up to the sea, and having various trees and creepers abounding with animals and birds" (Chap. I. 213-14). Thus even in case of forts, the purpose of the injunction is not only utilitarian but also artistic. The cities and towns also should be constructed in such places (cf Samarāngana Sutradhāra

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Ch. 8 verses 29-43). In case of temples, similar injunctions are found in all the treatises. The reason of this is not only artistic but also religious. A few verses quoted from Kasyapa's work by Bhaṭṭotpala indicate it clearly : "A place where tanks full of sweet and transparent water, thronged with birds, abound, where forests and pleasure gardens are in numbers, where trees always blossom, where swans and Karandava birds live in flocks and where peacocks dance..... there the Gods always remain and enjoy pleasure." Varahamihira further adds "The Gods come near the places which have water and gardens in them, either natural or artificial" (Bṛihat-Samhita Chap. 55 ; verse 3). Thus temples were placed with an artistic back-ground to make the presence of Gods easy of access to the devotees. Varahamihira's verses further prove that in crowded cities and towns where the natural scenery was not very attractive, where rivers or forests were not available, temples were to be built on excavated tanks ; and flower gardens were to be made to render the place beautiful and attractive to the Gods".[166]

That this principle was not a dead letter to the Indians but was followed by them is proved by the fact that the Puri and the Konarka temples, the Mamallapuram Rathas, Ellora and other cave temples all conform to this rule. All ancient temples, ruined or existing, are found to have tanks near them. In this connection, Havell's remarks are quite to the point.

The second principle refers to the soil the structure is to stand upon. We, therefore, find, in all the works, various rules laid down for the examination of the soil, which according to the Indians possessed various qualities. The object of this examination is mainly to ensure the stability of the building and partly to classify the various classes of lands, each class being fit, according to the authors of the Silpa Sāstras, for some particular purpose or for particular classes

(166) For this point see "Notes on the Mithuna" which was published in Rupam 1926, January (Printed here as Chap. XXIII).

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of peoples. The examination was based on the colour, taste, smell, elevation, sound, touch, overgrowth of trees and shrubs, the quantity of water available and the fertility of the soil. This system of examining the soil prevailed in India from a very early period, as is evident from its existence in the Gṛihya Sutras. In the Silpa-sāstras are found prescribed several practical methods for ascertaining the best sort, the middle class and the worst class of soils. The existence of the rules of 'Bhuparikshā' in all Vāstu-works proves the importance of the second principle of Indian architecture viz. that buildings must stand on a good soil as prescribed in the sāstras.

Closely related to the second principle is another which is a very striking one. While laying down the methods of examining the soil, it has been said in all the treatises that a soil having some particular smell, colour, taste etc. is fit only for the Brahmanas, another piece of land differing from the former in those respects is fit for the Kshatriyas and so on. Thus lands are classified for the use of different classes of peoples. This system, therefore, shows that even from the time of the Gṛihyasutras the Indians recognised a principle to the effect that all kinds of lands were not fit to be built upon by all the castes. In this connection it may be mentioned that this distinction between various castes as regards architectural matters is found not only as regards the soil, but also in the distribution of lands in a city, in the various sizes of buldings, storeys being limited to some particular number for each of the castes, and in various other minor details of building construction. Caste, therefore, appears to have here exerted influence upon architecture and such influence was noticeable not only in the character of the soil but also in the determination of types of architecture. Mr. K. V. Vaze's contention that in Silpa, "the terms Brahmana etc., do not mean the caste but only the first class—the best" can be accepted if these terms are used as epithets of the

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soil etc. But in most of the verses, it is clearly said that the particular sort of land is best fitted for the Brahmins and so on. Moreover, several methods also are prescribed for finding out the best soil for each of the castes. There is, therefore, no denying the fact that the caste system exerted a great influence on architecture. Whether in practice these injunctions were followed or not cannot be now ascertained but the mystic character of Indian life and the stress given to these matters in all the texts warrant us to conclude that these rules were followed as far as was possible for them. The ideal piece of land might not always be available.

The next principle relates to the shape of the land selected for a building. The land, according to the Gṛihya Sutras, must be either a square, a rectangle or circular in shape. This principle as regards the shape of the land was also followed in the ground plan of buildings. The earliest houses in India may be surmised to have been either square, or rectangular in shape. But even from the early period to that of the Brahmanas, we find the octagonal shape being very favourite with the Indians. The Satapatha Brahmana enjoins the Yupas (sacrificial stakes) to be eight-sided and octagonal pillars were the most favourite motif of decoration in Indian buildings. We have not met with any surviving temples the ground plan of which is octagonal in shape, but such temples are described in the texts. Triangular structures and structures having other odd numbers of sides were not much in use in India. All the texts refer to the square ground plan. Bhaṭṭotpala quotes several verses ascribed to Bharata Muni which describe the planning of three-sided temples. With the development of architecture, the site, the ground plan and the buildings began to vary in shape till in later texts we find references to six-sided, twelve-sided, sixteen-sided and thirtytwo-sided temples. The general principle, therefore, was to give to the structures even number of sides. Round temples have been found in India and are also described in the Silpa

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Sāstras. The Hoyasāla temples are star-shaped and so of many sides.

There is another matter of great importance as regards the shape in Indian architecture. Several sacred diagrams, the symbolic interpretations and mystic significance of which are still unknown to us, in spite of Mr. Havell's attempts to explain many of them, were recognised even by the architects. These diagrams, like the Svastika symbol, must have been very favourite with the Indians from the very earliest times and are now chiefly used in preparing the sacrificial fire, according to the Tantric form of worship. The Sarvatobhadra, the Nandyāvarta, and the Svastika figures are employed not only in the planning of towns and villages but also in planning private houses and religious structures. The Ramayana contains names of these types of buildings and all the Silpa-sāstras classify several buildings on the basis of their supposed or apparent resemblance with one or other of these diagrams. These diagrams must have had some great significance to the Indians and the use of these diagrams in architecture naturally raises the question whether Indian art is always to be explained symbolically as done by Havell. The answer to this, as far as I have been able to gather from the study of the Silpa-Sāstras, must be in the affirmative. To the Indians, architecture has, from the earliest periods, been associated with religion. In building a house various religious ceremonies had to be performed in various stages of the progress of the work. The precepts could not be violated; the time must not be unlucky ; because such courses were likely to bring misfortune not only to the owner but also to the mason architect. The regulations should be followed as strictly as the injunctions of the religious texts. That religion exerted a great influence on architecture is clearly apparent from the fact that the origin of many of the decorative elements (as on doors and on temples) (see next chapters) may be traced to religious necessity. Again in many of the Tantric works or works of the

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Pratiṣṭhā class also we find matters purely architectural; in fact, the Agamas contain the Indian Silpa-sāstra, the Hayasirshapancharātra does the same, and the Puranas also refer to architectural matters in connection with the worship of the various Gods. The Indian conception of a temple as described in another chapter, again clearly and finally proves that religion was the primary thing concerned and art for art's sake was secondary with the Indians. Indian Architecture, therefore, must be explained with reference to Indian religion ; for, the various mystic elements in that religion must have exerted great influence on it. Even in the Gṛihyasutras and the Arthasastra, posts and gates have been symbolically represented. The great principle involved may thus be put down viz., architecture like sculpture, the images of Gods, must therefore stand for an idea, a building being but a symbol of the invisible God.[167]

An objection may be raised that this principle can be applied to religious architecture only. But it must be remembered that architecture in India attained its perfection in its religious atmosphere, civil architecture being but a shadow of religious architecture. These considerations lead to another great principle of Indian architecture, viz. that religious buildings must not be made in the same fashion as the civil ones—all ornaments and all possible varieties were allowed in case of temples, but private houses must conform to the various restrictions of the Silpasāstras. Thus we find in the Silpasāstras, that though many of the broad features are common both to temples and private houses, there are many exceptions in cases of temples. Indians, therefore, lavished all energy and money on the construction of religious edifices. Indian Temples only have survived ; we do not find any old private house—temples of Bhuvanesvara and Puri and Khajuraho are still there ; but where are the palaces and pavilions

(167) See "Symbolism of the Stupi" by Coomaraswami I.H.Q. 1938—'I-S-G-Paddhati—Symbolism of Āsana and Doors' (JISOA 1942) by S. Kramrisch.

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of the kings who erected them ? The temples of southern India still afford ample material for the study of Indian architecture but the king's palaces and court houses are known only from the descriptions in Literature. (See Ch. XXVIII)

It has been suggested by several scholars that with the growth of the Vāstusāstras, when deviation from the rules was not allowed, there was a cripling of the high standard of art. This view, however, is not fully acceptable to us. Firstly, it must be remembered that Vāstu Vidyâ did not grow up in India, as scholars previously thought, with the decline of Indian art. It has been handed down to posterity from a very early period, as has been shown by me in so many chapters. Secondly, the canons no doubt prevented the free play of "inspiration of the artists and sculptors" but it was only to a very slight degree. All the texts lay down that in spite of the regulations, the masons could do 'Yathāruci' and "Yathāsobham". They could use their taste and likings i. e. discretion, and do 'as will make a structure beautiful'. Sense of the beautiful was never to be sacrificed. The masons, however, could not deviate from rules where it is definitely mentioned that deviation will cause death or such other calamities. In spite of the regulations, there was enough scope of display of the artist's talents.

The next principle as regards the situation of a "Vāstu" is that towns, cities, houses and temples all should face exactly the cardinal points. "Dikṣu Sadaiva Kartavyāḥ na Vidikṣu Kadācana" i. e. "All buildings must face the cardinal points and not the intermediate spaces". This principle, therefore, necessitated the determination of the cardinal points before the erection of a structure ; and this subject, therefore, forms a necessary chapter in all the texts on Indian architecture. Dr. Binode Behari Dutt's remarks that this regulation could not be strictly followed in cases of town-planning may also be true in cases of buildings, especially in crowded cities and towns.

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The next principle is the one relating to the ground-plan of a building or the area of a temple or a city. All the texts recognise the "Vâstu" i. e. the building site to be the body of a demon named "Vâstu-nara" or Vâstu Puruṣa." This demon is described to have been laid low by the Gods and each of the victorious Gods pressed down a part of his body. Thus pressed, the demon could not rise up again. The Gods who occupy the body as well as the Vāstunara himself are to be worshipped on the occasion of building a house. The custom is as old as the time of the Gṛihya-Sutras or even the Rigveda, as shown by me. From the tradition of this demon arose the system of dividing the ground plan into several squares or parts (Padas) each being in possession of a presiding deity, trampling that part of the body of the 'Vāstu-nara'. The ground plan of a private house or of a city should thus be divided into 81 squares and that of the temples into sixty four. In most of the works of the Northern school, only these two systems of division are to be met with, whereas, in some of the later works, the squares may number as many as hundred ; and according to the southern Texts, the number may be 256 and a name was given to each of the thirty two figures formed by each sort of division. E. G. Manduka, Paramaśayika and so on. Brahmmā is said to occupy the central square in all these figures and that place is called the "Brahmma-Sthāna". This system of dividing the ground plan helped the architects in calculating the relative proportion of the different parts of a building and also in many other respects. The "Brahmma-Silâ" or the stone on the top of the temple (the Āmalaka) thus indicates that it must be just above the Brahmma-sthāna on the ground-plan.

The sixth principle deals with the measurements used in the construction of various structures. The units of measurement are described in all the available texts. The 'Angula' is the most commonly used unit in measuring the buildings and 'Daṇḍa' in measuring the villages and cities.

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The height, width and depth of different structures are calculated in different manners, according as a part of the height, width or depth is often left out at the time of calculation. The unit 'Angula' is also of three kinds, a particular kind being used in a particular case. Again the standard 'Angula' is sometimes taken to be the Angula (i. e. the breadth of the finger) of the master, and sometimes that of the mason. Similar also is the case with a 'Hasta' or cubit. These various units are more or less common to all the texts both Northern and Southern.

The Vāstu-Sāstras lay down fixed rules regulating the size of the various kinds of structures and the relative proportion of the size of the different parts of a structure. In doing so, the texts generally cite the largest and the lowest possible sizes, and sometimes one or more of the intermediate ones. It has already been said that in size too, the buildings of the various castes are enjoined to be different. If the proportions laid down in the treatises are followed, a single broken part of a lost structure enables us to calculate the size of the whole structure. This is clearly shown by the rules regarding the proportions between the temple, the images and the doors. Most of the texts are nothing but the enumeration of the relative proportions between the various parts of a building. These regulations, therefore, clearly indicate the great care of the Indian master-architects for making the buildings symmetrical and proportionate in their various parts.

The next principle relates to classification and nomenclature of cities, villages, forts and all possible kinds of structures, civil or religious. These classifications were based on various principles, such as, the size, form, decorative elements, materials, mouldings and the like. Towns are generally classified according to the number and position of the streets and the gates, and were named after the diagrams to which the plans conformed. In the classification of

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buildings too, as has already been said, these diagrams play important parts. In the classification of temples the treatises of the Northern school differ in many respects from the Southern. In the Northern school itself two systems at least are discernible. In the later works various ways of classifications arose. This system of classifying the buildings may be traced from a very early period of Indian History, as has already been shown in other chapters.

The principle of naming the various parts of a building is also noteworthy. Many of the terms resemble those of the vegetable world, while others resemble the terms of the human anatomy. Sometimes the names indicate clearly some demarcating features ; sometimes they are Geographical; sometimes mythological and sometimes poetic. Often they indicate the great stability or other aspects of a structure. In this connection it may be mentioned that in the Southern texts many of the names end in "Kânta" such as 'Rudra-Kânta', "Vishnu-Kânta" etc. This word "Kânta" perhaps should be read as 'Kānda' as many scholars contend. Whatever it might be, this system of adding a "Kānta" is not to be found in any of the works of the Northern school.

The next principle relates to the sanitary arrangements. The Arthasastra lays down several regulations for sanitary purposes. Another such rule is the one prohibiting a "Vedha" in the doors. The regulations as to the elevation of the soil, and the direction of the streets in a city were also meant for good sanitation of the building or the city. The rules regulating planting of various trees near a house, some being prescribed and some prohibited, must also have originated from hygienic principles.

The next great principle consists in the selection of the best materials for a construction. Elaborate rules are laid down for choosing the best wood as well as the bricks and the slabs of stone. All the works reveal acquaintance with several kinds of cement or plaster called the Bandhodaka

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or the 'Vajralepa'. The lime plaster called 'Sudhā' is also described in many texts. The sizes of bricks are described in all the works ; and if the size of bricks be a criterion for the calculation of the age of a building, these Vāstu-Sāstra regulations afford an interesting study to the archaeologists. Regarding materials it should also be noted that there is a strong belief among the Hindus (I know it definitely among those of Bengal) that brick-built houses are not auspicious for all families. In case of a member of that family erecting such houses, they apprehend a calamity in the family. This prejudice against brick and stone built houses existed also in ancient India (See Ch. XXVIII). The prejudice against brick disappeared earlier, but against stone continued till a long period.

The next principle refers to the various decorative elements. Most of the texts agree as regards the various motives. Many of these motives were taken from the natural world, the animal kingdom, both of land and water, and also the mythological world. Several motives were recognised as especially auspicious, such as, the group called 'Aṣṭamaṇgala', the Mithuna figure and the like. Scenes from mythology, fables and dramas were also prescribed. All the texts, however, agree in saying that only those which produce a delightful atmosphere should be depicted. Indian art is related not only with poetics and music but also with dancing. As in the Alamkāra sāstra, the Rasas also play an important part in Indian architecture. The scenes depicted as decorative elements, produce various kinds of Rasas and it is, therefore, that we find that while some of the rasas have been prescribed, others have been prohibited. Again, the decorations of the houses of citizens, of those of the kings and of those of the temples could not obviously be of the same nature. Some of the decorative scenes are prescribed for one while proscribed for the other.

The next principle relates to town-planning. This subject

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itself forms an interesting study and has been well dealt with by B. B. Dutt in his book ("Town planning in Ancient India"). The general principles may here be noted and some have already been noticed in the foregoing pages. It has already been stated that street-planning formed one of the most important features in a city. The walls, and towers, the fortification and ditches and the gateways were constructed on well-regulated principles. Many bye-laws were established for the construction of the houses. The whole city should have to be sanctified by the presence of the temples of various gods and godesses. The royal palace was constructed on a definite plan. Different parts of the city were relegated to peoples of different occupations and castes.

As in the case of town-planning, so also in the planning of residential houses, royal houses and temples, the whole site was divided into its component squares, as described before, and each square or a part of it was enjoined to be inhabited by a particular class of people or used for some other particular purpose. In case of private houses, each part was to be used for a particular specified purpose. In case of temples, the courtyard was sometimes decorated with temples of minor deities and the position of each of them is definitely laid down. This system must have arisen from town-planning, thus showing the influence of town-planning on architecture.

The principles regarding the technique and stability of the structures will best be understood from the detailed study of the various structures. The examination of soil and the materials is a most important matter for the stability of the houses. The various classes of plaster and cement also gave to the structure immense capacity for withstanding the ravage of wind and weather.

The last principle relates to the ceremonials. The ceremonials were to be performed along with the Sthapati and the workmen on auspicions months, days and moments. This regard for the masons and the various qualifications of masons

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described in the texts indicate the high position held by the architects in ancient India. Offerings were paid not only to the gods presiding over the different parts of the body of the Vāstu-nara but also to others, including gods of the quarters and other minor ones. The worship of the gods of the quarters gave rise to the elaborate system of depicting their images on temples along with their Vāhanas (vehicles).

The worship of the doors evolved the elaborate decorations over them. The whole temple was also worshipped, the significance of which will be shown later on. Thus, though these ceremonials appear to the modern critics as mere superstitions, a consideration of the details is absolutely necessary for the proper understanding of Indian architecture. The 'Dharma' of India cannot be translated as 'religion' as understood in other countries. All activities of the Indians together form the Indian 'Dharma ; and as such, the consideration of one branch of this activity requires the consideration of the others. Indian architecture is closely related to the religion of the Vedas, the Puranas, the Tantras as well as to the various mystic rites and notions prevalent all over the country. It is on the right interpretation of the various mystic things that the solution of Indian problems depends. It must be remembered, however, that the interpretations must be, not according to our ideas, but according to what the people of ancient India thought about them, i. e. the explanations that we get in the works on Vāstu Vidyā.

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CHAPTER XXII
Brahmanic Conception of Temple

Ruskin, in his classification of Architecture designated one class as devotional, intending thereby to specify buildings constructed as places of worship. A temple, according to this classification, falls under the class of devotional architecture. But its Brahmanic conception is not so rudimentary, but may be properly called transcendental. A temple according to Brahmanic conception is the visible outer casement (body) of the invisible deity a visible image of which is installed in it as an emblem of the invisible spirit which pervades all nature. The temple according to this conception is not merely a place of devotion, but also an object of devotion like the image and the invisible spirit. Hence the temple is regarded, like the human body, as the outer visible shape of the shapeless and its worship is performed by an act of going round it called circumambulation (Pradakṣiṇa). The next step is the worship of the installed visible image according to Dhyāna revealing its real character as an emblem of the invisible spirit which is worshipped not with any external offerings but with mental contemplation alone. According to this conception, the various parts of a temple are designated by names which correspond with the names of the various parts or the limbs of the human body. Attention was drawn to this by Mr. A. K. Maitra in a paper on 'Excavation in Varendra' published in the now defunct Bengali Magazine "Shahitya" and also in the Modern Review (1924). A text in its support was reproduced from the Hayasirsa-pancharātra quoted in the Haribhaktivilāsa. A portion of the Hayasirsa-pancharātra in an unpublished MS. In the possession of the Varendra Research Society, Rajshahi, contains the text in a dilapidated form. This text is also to be found in the Agnipurana (Ch. 61. Verses 19-27) and the essential features indicated in it in the 'Silparatnam'.

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That the different parts of a temple are still designated according to this conception by technical terms revealing analogy with the human body was ascertained by Late Manmohan Ganguli from the surviving temple-builders of Orissa and noted and illustrated in his Book "Orissa and Her Remains". Some of these technical terms were noted by Ram Raz in his celebrated essay on Indian Architecture, showing clearly that the conception was not limited to any particular locality.

This conception accounts for the peculiar architectural scheme of temple building in India for which independent evolution has been openly or tacitly acknowledged by all scholars. A lavish display or ornamentation on the outer face of a temple and usual absence of decorations in its interior attracted the notice of all scholars, some of whom, mostly foreign, looked upon the outer display as unnecessary waste of expenditure as noted by Fergusson. Indian art, however, found its justification in this peculiar conception. To the orthodox devotee the temple is not a mere building, a pile of brick, stone or any other material but is the visible representation of the deity itself which may appeal easily to the recognition of all classes of devotees irrespective of their intellectual attainments. Going round this visible deity is still performed with adequate reverence in solemn silence with the mental recitation of a mantra and after this is finished and the circumambulater is ready for entering the temple, he has to worship the door-keepers and the door. These ritualistic injunctions are in perfect keeping with the conception in question. It reveals a new view-point from which temple-architectures in India has to be studied.

The texts bearing on this matter are quoted in the Appendix[168].

([168]) (1) Agnipurana—Ch. 61. 9-27
(2) Haribhaktivilāsa—19-197
(3) Hayasirsapancharātram—Mss. Ch. 39
(4) Silparatna—Ch. 16. 114-123.
(5) Isānasivagurudeva Paddhati (III p. 102)

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CHAPTER XXIII

The Mithuna in Indian Art

In the illuminating article on the subject published in the July number of the Rupam, 1926 O. C. Ganguly has offered an explanation for the origin of the obscene sculptures found on the Hindu Temples of India. He has tried to prove that the system of depicting these sculptures was suggested to the artisans by the device of the Mithuna-figures placed on the doors as an auspicious symbol. From very earliest times, these Mithunas were curved over the doorways of temples, and Mr. Ganguly has very ably traced the development of these Mithuna-figures into the most erotic and obscene sculptures of Orissa and other places. In support of the custom, a passage from the Agni Purana (140-30) has already been quoted, which shows that the artists in drawing the Mithuna-figures were following a tradition prevalent from very early times in India. As these points have created a general interest among scholars, a collection of all the available texts having some bearing on the subject will be helpful to those who may make further investigations in the line.

The age of the texts cited from the Agni Purana can not be ascertained at present. But it undoubtedly resumes the injunctions of earlier texts. Many of the chapters in the Agni Purana dealing with architecture bear a close resemblance with passages quoted in the Haribhakti-bilāsa from the Hayasirshapancharātra. In fact, from chapter 38 of the Agni Purana, we learn that the compiler of the Purana was acquainted with that work, Hayagriva himself being made the reciter of the following chapters. There is therefore no doubt that the injunction regarding the placing of Mithunas on doors was inserted into the Agni Purana from the Hayasirshapancharātra. In fact, the Saurakānda of this work, available in

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manuscript form in the Varendra Research Society, Rajshahi, contains a passage similar to the one quoted by Mr. Ganguly. This is :—"Patrabhangė Samithunaiḥ Sākhādûrddhvam Vibhuṣayet". The date of the Hayasirsha-Pancharātra, however, is yet unknown. Another passage exactly similar to this occurs in Varahamihira's Bṛihatsamhita, a work the date of which has been accepted by all scholars to be the middle of the sixth century A. D. In Chapter 55 on the Prāsādalakshana it is enjoined.—"The remaining part (of the door-jambs) should be decorated with auspicious birds, Svastika designs, vessels, Mithunas, leaves, creepers etc". This passage again though written in the sixth century, undoubtedly codifies earlier practices as Varahamihira admits at the end of the chapter. (He writes "I have here told in short the features of a temple ; all that was written by Garga is included herein. This subject was written by me with a full remembrance of what was written in details by Manu and others." From this we may conclude that the texts relating to the Mithunas on the door-ways, contain but the traditions of early Indian Architecture.)

The next point about the Mithunas noted by Mr. Ganguly, is that sculptures show that Mithuna did not mean human couples only, but also of animals, birds, serpents etc. Two passages in the Samarāngana-sutradhāra (Chap. 31-126, 134) clearly enjoin the figures of monkey couples and of couples of elephants playing in water to be used in decorating the buildings called the Dhārāgṛiha or Bathrooms. This shows that the animal-couple motif was a favourite one with the Hindus.

The next suggestion of Mr. Ganguly as to the motive of placing these figures on the temples has also been supported by him by an ancient text regarding the choice of the land best suited for a temple. The passage referred to by him occurs in the Haribhaktivilāsa as a quotation from the Hayasirsha-pancharātra. Similar passages have been traced

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in the Saura-kanda manuscript of that book (Ramanté Puruṣāḥ Yatra Yoshito Dhenavastathā Sa Prasasta Tu Sarveṣām.) and the Samarāngana-sutradhāra (Chap. 8. 43) :—

"Ya Vāhanānām Sukhadā Mithunānām ratipradāḥ
Purārtham Tāḥ Praśasyanté Bhumayo Janitaśriyaḥ".

The psychology of picturing, on the shrines, the effigies of loving couples in order to meet the difficulty of getting a piece of land where couples lived and loved each other, may be supported by ancient texts. From the earliest times from the time of the Gṛihya-sutras, Indians were very particular about the selection of the land for raising a structure. All works on architecture contain long chapters on the Bhupariksha or the examination of the soil. In these chapters, lands are directed to be examined as regards their colour, taste, fragrance, fertility, elevation and even the surrounding scenery. This shows the importance attached by the Indians to the site of a building. A passage from the work of Kasyapa, a predecessor of Varahamihira, is quoted by Bhaṭṭotpala, according to which 'A place where tanks full of sweet and transparent water, thronged with birds, abound, where forests and pleasure gardens are in numbers, where trees always blossom, where swans and Karandava birds live in flocks and where peacocks dance—there the gods always remain and enjoy pleasure". The best place for raising a temple was, therefore, on the sea-shore, on a river, on the skirt of a forest and on a hill beside a spring. The Puri and the Konarka temples, Ellora and other caves all prove that the Indians always followed this practice in building a temple. Varahamihira (Bṛihatsamhita 55. 3) while discussing the subject adds "The gods come near the places which have water and gardens in them either natural or artificial". It is therefore evident from this passage that in crowed cities and towns where the natural scenery was not very attractive, where rivers or forests were not available, temples were built on the bank of a tank; and flower gardens were made to render the place beautiful And

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attractive to the gods. All ancient temples, ruined or existing are thus found to have tanks near them. The practice of artificially making a site suitable for making a temple was thus very early custom with the Indians. It is therefore very probable that the artists did not stop with merely the excavation of a tank or the foundation of a garden by the side of a temple, to make it attractive to the gods, but also carved on the temples themselves scenes from nature. Creepers and foliages, peacocks and swans, herds of elephants and monkeys are the favourite decorative elements of all the temples found in India. A description in the Samarāngana Sutradhāra (Chap. 34. 30-31) of the figures to be carved on buildings points to these facts. This tendency of making the site attractive according to the directions of the Silpasāstras is thus apparent from the texts as well as the decorations of the temples themselves. The existence of the figures of couples—human or of animals, may thus be explained from the passages referred to above.

Actual texts recommending the placing of couples on the body of the temples are very meagre in number. Only one text has been traced in the Samarāngana-sutradhāra a book of the 11th century A. D. It is :

"Ratikrīḍāparā Nāryyo Nāyakastu Yadṛicchayā
Kimcit Pratanubhir Gātraiḥ Kāryāḥ Suratalālasāḥ."
(Chap. 34. 33-34.)

Three other passages in this connection should be discussed here. The Mayamatam (Chap. 18. 111) and the Silparatnam (Chap. 46. 9-10) enjoin that "On the habitations of human beings should not be figured the scenes of wars, death or sorrow or legends about gods and Asuras or nude figures and the Lilā or amorous sports of the ascetics. On other buildings, made for other purposes, whatever is desired may be done." These passages show that on temples there could be depicted the figures on the above subjects. The word Tapasvilīlā is most significant. Does it mean the figures of ascetics engaged in amorous sports ? A similar passage in the Suprabhedāgama

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(V.R.S. copy) may be taken to point to that meaning. In the 30th Patala, it is said—"Particularly (one should make) the figures of Siva's sport (Sivakrîḍā), of Hari's sport (Harikrîḍā) and sport of the ascetics (Tapakrîḍā)". We meet in actual sculptures the figures of Siva engaged in amorous sport with his consort and scenes from the love story of Rādhā and Krishna are innumerable. Sivakrîḍā and Harikrîḍā therefore undoubtedly refer to such sculptures. The mention of Tapakrîḍā along with Siva's and Hari's sports raises the suspicion that the word Krîḍā in the former case also means amorous enjoyments. In many of the erotic scenes on the Puri, Bhuvanesvara and Konarka temples the male figure is that of an ascetic with a head shaved all over and a ring of beads in one hand. If all the male figures in such sculptures may be found to be of ascetics alone we may safely conclude that they were curved there according to the above texts. The above passages may thus give a clue to the existence of the obscene figures on the temples of India. But it is difficult to understand why the ascetics, famous for their religious pursuits, should have been made to perform such repulsive acts.

It may be noted here that in Orissa, the priests account for these sculptures by saying that they will prevent thunder from falling on the temple. This theory is quite consonant with what has been written above. All the Silpa texts enjoin that auspicious designs on buildings and strict following of the injunctions will give stability to structures, and that deviations will be disastrous. During the ceremonials, mantras are uttered praying Indra to save the building. Every matter in connection with a building is, therefore, designed to protect it from dangers and calamities.

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CHAPTER XXIV

The Door in Indian Architecture

Doors form an important feature in all classes of buildings and the gradual development of the characteristics in India is an interesting matter for investigation. From the earliest times, the scriptures and the treatises on architecture laid down regulations as to the position, the dimensions and the relative proportions of the different parts of the doors, with a view not only to make the habitation suitable for its purpose but also to make it beautiful, and healthy and conforming to the mystic ideas of the Indians connected with architecture.

The earliest regulations about doors are to be met with in the Gṛihya Sutras. The Gobhila (IV. 7. 15-20) and the Khādir (IV. 2. 14-15) Gṛihya Sutras lay down rules as to the cardinal point which the door is to face, as different cardinal points were believed to bring different results for the builder. Thus "one who is desirous of fame or strength, should build his house with its door to the east, one who is desirous of children or of cattle with its door to the north, one who is desirous of all these things with its door to the south. Let him not build it with its door to the west and with a back-door." (Gobhila Gṛihya Sutra). These traditions about the effects of the different positions of the doors were handed down to posterity and the rules were highly elaborated in the Puranas[169] and the later Silpa-Sāstras (Treatises on architecture etc.)[170]. Houses were classified and appropriate names given to them according as the door faced one or more

(169) Matsya Purana, 255. 7-9 ; Agni, P. 105. 25 ff. ; Garuḍa, P. 46. 31-35.

(170) Garga, quoted by Bhaṭṭotpala ; Bṛihat Samhita 53. 70-75, Visvakarma Prakāsa, 7. 66 ff. ; Mayamatam and all other Southern texts. This chapter is based on Northern texts only.

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of the cardinal points. Thus according to the Matsya Purana (Chap. 254. 1-4) a house without a door facing the west i. e. having doors facing only the north, east and south, was called Nandyāvarta, that without a door facing the south Vardhamāna, without a door facing east Svastika and without a door facing the north Ruchaka.

Of the other rules citing the defects to be avoided, the more important ones are those evidently aimed at the avoidance of obstruction to light and air. These obstructions are known under the technical names of Vedha and each of the Vedhas, in case it happens in the construction of a door, was believed to bring a calamity to the master of the house, either to himself or to his sons or wife. Some of these obstructions are a road, a tree, a corner, a well, a pillar, a water-channel, a temple and so on. The list was more and more enlarged in later[171] times and assumed too great a form to be enumerated here. But as it is indeed difficult to avoid these obstructions in crowded cities and villages, so in such cases a little distance from the object of obstruction was recommended for the situation of the door ; the irreducible minimum has been fixed at twice the height of the house and all authorities are found to be unanimous on this point. The rule says "the distance of twice the height being left (from the door to the Vedha), there occurs no Vedha".[172]

Very few specimens of civil architecture of ancient India now survive and therefore, the regulations found in the treatises about the doors of private buildings can hardly be verified. Such rules are to be met with almost in all books dealing with architecture[173]. The dimensions prescribed for the height and width and the relative proportion to be

(171) Matsya Purana, 255. 10-14 ; Agni P., 104. 31-34 ; Bṛihat Samhita, 53. 76-78 ; Visvakarma Prakāsa, 7. 72 ff.

(172) Matsya Purana, 255. 14 ; Agni P. 104. 34 ; Bṛihat Samhita 53. 76 ; Hayasirsa Pancharātra, Saura Kānda.

(173) Matsya Purana, 254. 42 ; Bṛihat Samhita 53. 24 ; Visvakarma Prakāsa, 2. 162.

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observed between them and the other parts of a door have been described in a very round about way in the Bṛihat Samhita. The height is called Ucchraya, the width Vishkambha or Pṛithutva, and the depth Vāhulya or Ghanatva. The verses have been formed into several formula and are given below in the form of a table :—

I. Doors of the houses of kings and the commanders.

(a) Height of the door = the prescribed width of the house[174] reckoned in Angulas + $\frac{\text{width of the house}}{11}$ + 70 = 108 + 10 + 70 = 188 Angulas = about 8 cubits.

(b) Width of door = $\frac{1}{2}$ its height = 4 cubits approximately.

(c) Depth of the jambs = the height to be reckoned in Angulas = 8 Angulas.

(d) Width of jamb = $\frac{\text{height of door} \times 7}{80} = \frac{188 \times 7}{80} = 16\frac{1}{2}$ Angulas.

II. Of the houses of Brahmins etc.

(a) Width of door = $\frac{\text{prescribed width of house}^{175}}{5}$ + 18 + $\frac{\frac{\text{width of house}}{5}}{8}$ + 18 = $\frac{32}{5}$ + 18 + $\frac{\frac{32}{5} + 18}{8}$ = 6 + 18 + 3 = 27 Angulas.

(b) Height of door = 3 width = 81 Angulas = about $3\frac{1}{2}$ cubits.

(c) Depth of jamb = height of door reckoned in Angulas = $3\frac{1}{2}$ Angulas.

(d) Width of jamb[176] = $\frac{\text{height of door} \times 7}{80} = \frac{81 \times 7}{80}$ = 7 Angulas.

(174) Bṛi. Sam., 53. 4-5 ; Mat. P., 254. 15 and 18-19.
(175) Bṛi. Sam., 53. 12-13 ; Mat. P., 254. 28.
(176) The Visvakarma Prakāsa clearly states that the dimension of

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The depth of the lintel according to Varahamihira, as explained by Bhaṭṭotpala is one half times more than that of the jamb. But as in the temple doors, the natural depth ought to be equal to that of the jamb, otherwise the frame can hardly be well-joined. So it seems the commentator has erred in taking "sārdham" to mean "one and a half". If we take "sārdham" to mean simply "with", the verse appears to be correctly explained and the depth of the lintel is thus meant to be equal to that of the jamb.

A comparison of these rules with those regarding the temple-door will show that they vitally differ in several respects. Whereas all the texts prescribe a height twice the width for the temple door, both the Visvakarma Prakāsa and the Bṛihat Samhita prescribe for the doors of domestic houses a height equal to three times the width. A height twice the width (i. e. 54 Angulas) would have made the door too low for daily use and so there can be no doubt about the correctness of the reading "trigunam" in connection with the same. Bhaṭṭotpala also accepted the reading. But inspite of that small and disproportionate size, the chief door is enjoined by all the authorities to be highly decorated with auspicious designs[177] e. g. a pitcher, fruits, such as, sriphala, leaves, creepers, and goblins, to which are added by Bhaṭṭotpala the figures of lions, tigers, swans and other birds. This system of carving figures on the door-jambs is still followed in many parts of India, as a plain door was proscribed as inauspicious.

In the Silpa Sāstras, the Purnas and some of the Tantras are laid down elaborate rules for the doors of the temples and

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the door of a king's and a commander's house should be 188 Angulas, and that of a Brahmin's house 27 Angulas, meaning thereby the dimension of the height and the width respectively. The width of the jambs, however according to Visvakarma Prakāsa, should be as many Angulas as the height of the door together with 12 Angulas more. The text in the Visvakarma Prakāsa about the dimension of the depth of the jamb as well as the whole section dealing with these subjects in the Matsya Purana seem to be corrupt. The correct version seems to have survived in the Bṛihat Samhita.

(177) Bṛihat Samhita 53. 82 ; Matsya P., 255. 19.

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other devotional structures. Several verses containing these regulations and ascribed to Kasyapa, are found quoted in Bhaṭṭotpala's Commentary. The Agni Purana, the Garuḍa Purana and the Hayasirsa Pancharātra appear to have preserved a tradition different from those in the other books but not quite unknown to them.

All the books agree as to the position of the doors. They must face the exact cardinal points and must not be turned to any of the corner directions[178] and should be placed in the middle part of the side-walls i. e. equal parts of the walls should be left on two sides of them[179]. The width of the door and the proportion it bears to the side of a temple have been described in three different ways. They are :—

(1) The whole ground plan of the temple being divided into 64 squares, 8 being on each side, the Garbha (sanctum) should be made of the 16 inner squares relating each of its side equal to half the width of the temple; in the the middle of this side and covering its one-fourth by the width should be the door entering into the shrine. Thus one-eighth of the temple-side represents the width of the door[180].

(2) The Garbha should be divided into 5 equal parts[181] and one-fifth of it should represent the width of the door. In this case the width of the door becomes one-twentieth of that of the temple-side, for the width of the Garbha side is prescribed here as being one-fourth the whole temple[182].

(3) The rule making the width of a door one-fourth the side of a temple is found in a Ms. of the Hayasirsa Pancharātra but the reading may be corrupt.

The height of the door is generally enjoined as being

(178) Agni Purana, 104, 24.
(179) Bṛihat Samhita, 56. 10 ; Vishnudharmmottaram, 88. 2.
(180) Matsya Purana, 270. 18; Bṛihat Samhita 56. 12; Vishnu Dharm. 88. 7; Kasyapa quoted by Bhaṭṭotpala.
(181) Garuḍa Purana, 47. 9; Matsya Purana, 269. 5-6;
(182) Garuḍa Purana, 47. 6, Matsya Purana, 269. 1.

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twice its width : and 10 dimensions covering the possible maximum and the minimum have been definitely laid down. Of them, those with a height of 150, 140, 130. and 120 Angulas are the best ones, three are said to be of the middle class and the minimum is laid down as 80 Angulas[183]. The Agni Purana and the Hayasirsa Pancharātra say that the height may be twice the width or may be 4, 8 or 10 Angulas more[184]. The height again should be such as to make a view of the idol inside possible from a distance. So the height of the image should together with its pedestal be made equal to the opening less by one-eighth. This fixed proportion of the height of the image with that of the door and of the door with that of the temple enable us to guess the dimension of the one from the other.

The jamb, the lintel and the sill are to be in width equal to a quarter of the height and their depth equal to a quarter of the width of the door i. e. half their own width[185]. All the texts are unanimous on this point.

The next rule concerned is about the form of the jambs and the lintel. It is laid down that the jambs should never be a single plain piece but should comprise of 3, 5, 7 or 9 parallel perpendicular sections, each adorned with various sculptures on them. A quarter of the jamb from down upwards is reserved for the insertion of the door-keepers' image, which differ according to the nature of the main deity enshrined. The rest of the jamb should be decorated with auspicious elements such as birds, trees, Svastika designs, vases, human pairs, creepers, foliages, goblins (Bṛihat Samhita), aquatic animals, lotuses, swans (Kasyapa), and the Avatāras of Vishnu in a Vishnu temple (Hayasirsa Pancharātra quoted by Haribhaktivilāsa). Besides these are recommended the images

(183) Matsya Purana, 270. 22-24; Agni Purana. 104. 26 and Haya. P.

(184) Agni Purana, 104. 27-28 ;

(185) Dr. Acharya here misinterprets the word 'Bāhulya' (See App. D).

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of the Navagraha (nine planets), Ganesa (Kasyapa), and the figure of Lakshmi as being bathed by two elephants (Hayasirsapancharātra quoted by Haribhaktivilāsa), which are found in the existing specimens on the lintels only.

The names of the Dvārapālas or the door-keepers are enumerated in the following lists :—

(1) Bhaṭṭotpala's commentary on the Bṛihat Samhita mentions, as the examples of the Dvārapāla, the names of Nandi and Danda.

(2) Hayasirsa Pancharātra (Saura Kanda) makes Danda and Pingala the right and the left Dvārapālas evidently of the Suryya temples.

(3) Chanda and Prachanda with Danda (staff) in hand and in form similar to Vishnu, mentioned as the two Dvārapālas evidently of Vaishnava temples in the Hayasirsa Pancharātra quoted by Haribhaktivilāsa.

(4) The Meru Tantra, quoted in the Puraścaryārnava enumerates the following Dvārapālas of each of the Pancha Devatās viz. Siva, Vishnu, Ganesa, Suryya, and the Sakti goddess :—

I. Of Siva.

(i) Nandî[186] and Mahākāla on the western door.
(ii) Ganesa and Bull on the northern door.
(iii) Bhringiriṭa and Skanda on the eastern door.
(iv) Umā and Chandesvara on the southern door.

II. Of Vishnu.

(i) Nanda and Sunanda on western door.
(ii) Chanda and Prachanda on northern door.
(iii) Vala and Pravala on eastern door.
(iv) Bhadra and Subhadra on southern door.

III. Of Ganesa

(i) Vakratunda and Ekadanta on western door.
(ii) Mahodara and Gajānana on northern door.

(186) The reading in the published text is "Nadî" which is evidently a mistake for Nandî.

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(iii) Lambodara and Vikaṭa on eastern door.
(iv) Vighnarāja and Dhumravarna on southern door.

IV—V. Of Suryya and the Sakti Goddess

The following seven Yoginis with Srî :

(i) Brāhmî and Māhesvarî.
(ii) Kaumarî and Vaishnavî.
(iii) Vārāhî and Indrānî.
(iv) Chāmundā and Sr .

An attempt may now be made to see how far the conventional rules as laid in the above treatises on architecture were followed in the construction of the doors of the existing Indian devotional buildings. The first thing that strikes us on the examination of the existing specimens is the uniform character of the doors throughout the different parts of India and in buildings of the different sects. The doors of the Buddhist and Jaina caves of western India, of the Jaina temples at Rajputana and of the Hindu temples of Kashmir, the Central Provinces and even of Magadha, Orissa, and Bengal are so much alike in their main features as can hardly be distinguished as to the locality or the religions to which they belong. This is true of the earliest caves as well as of the latest Hindu temples of thirteenth or fourteenth century A. D. ; and thus points to the high antiquity of the traditions relating to the forms of the India doors and the deep-rooted custom they gave birth to. The Buddhist cave at Karle dating from the first century B. C. has on both sides of each of the doors a male and a femal figure in pair (Mithuna) occupying the position of the Dvārapāla and reminds us of the similar figures on the Hindu doors. The Ananta Gumpha on the Khandagiri in Orissa dating from about the same period has over one of its doorways the figure of a standing Lakshmi with two elephants pouring water over her head. The Nasik Gautamiputra Cave of the second century A. D. has in the side-pilasters of the central door six compartments each filled with two males and a female, and on each side is a Dvārapāla holding a bunch

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of flowers. The makara's head that occurs on the lintel is further decorated with lotuses and garlands. All the features thus noted in the doors of the Buddhist caves of the early period are of most common occurrence on the doors of later Hindu temples.

It is in the existing relics of buildings of the Gupta period that one may notice all these features of a developed Indian door. Cunningham, in reviewing the temples of the Gupta period laid down as two of the characteristic features of this period the following points, viz. (1) Prolongation of the head of the doorway beyond the jambs and (2) existence of the figures of Ganga and Yamuna guarding the entrance-door.[187] These two features were common both to the Hindu and the Buddhist temples of India. The earliest figure of Ganga is perhaps to be found on the brackets discovered at the Kankali mound at Mathura and perhaps belongs to 2nd century A.D. (Plate XXXVI, Figs. 1, 2—Smith 'Antiquities of Mathura'). In the Ajanta Cave No. 5 the two female figures standing on Makaras on the top of the door project beyond the line of the general ornamentation, giving it considerable breadth and dignity. The same arrangement slightly modified and not on so extended a scale occurs in Caves Nos. 22 and 24. and at Elura Cave No. 6. The same figures, but enclosed in the ornament, occur in Caves No. 7 and 15 at Ajanta and may generally be considered as most characteristic of the style. They possibly, as in Hindu sculpture, represent the river goddesses but it is not easy from their emblems to discriminate whether both are intended for the same or represent different rivers"[188]. Thus these female figures on Makaras in the Buddhist Cave doors seem to be but a modification of the Hindu system of representing Ganga and Yamuna on the doors of the temples. The origin of these two figures cannot be traced to the regulations in the available treatises on architecture but may be

(187) Cunningham's Arch. Surv. Rep., Vol. IX, pp. 42-44.
(188) Arch Surv. West. Ind., Imp. Ser., Vol. IV, p. 51

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explained by the directions in the Tantras[189] regarding their worship at the time of worshipping the door. Thus the Meru Tantra and the Sāradā Tilaka (Chap. IV) while citing rules for the worship of the door, say that Ganga and Yamuna should be worshipped along with the other gods and goddesses named. In the Agni Purana (Chap. XXI and XXXIII) we find the worship of these two goddesses along with Sri on the door directed to be performed before one worships Vishnu or Siva. The I-S-G-Paddhati also enjoins the worship of the goddesses, at the time of worshipping of the door. These directions therefore may be considered to be the true source of the custom under discussion. The figures of Ganga and Yamuna on doors are so very common that among their find-places we may mention but a very few ones, e. g., Sanchi, Kashmir, Aihole, Kharode, Pujaripalli, Bhuvanesvara etc.[190]

Besides these elements there are others which are common to the Buddhist and the Hindu doors. The division of the jamb into several sections decorated with pairs, creepers and foliages, the Makara, animals, and the like and the whole door frame being encircled by an oblique lotus petal border are exactly what are found enjoined in the treatises and followed in the construction of the Hindu temples. The lintel of the Ajanta Cave No. 5 is divided into 9 panels with the figure of a seated Buddha in the centre and thus reminds one of the similar position of the Navagraha in panels or of the small figures of the main deity or his Vāhana which are generally placed by the Hindus over the lintel indicating the nature of the image inside the shrine.

Of the dvārapālas, named in the above list, some may undoubtedly be identified with their figures in the existing specimens. Thus in the Siva temples at Orissa, Nandi and

(189) Tantrasāra—Kalāvatidikshāprayoga :
Meru Tantra, Sāradātilaka, I-S-G-Paddhati III 13. 25.

(190) For these figures the paper in the Rupam by Mr. A. K. Maitra may be consulted.

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Mahākāla invariably stand as the door-keepers on the door-jambs[191]. In the Vaisnava temples at Bhuvanesvara and Puri we find on the jambs two four-handed figures exactly similar to Viṣnu himself. These two may be identified with Chanda and Prachanda, the two door-keepers of Viṣnu mentioned in the Hayasirsa-Pancharātra and the Meru Tantra.

The Navagraha images on lintels of temple doors was a fairly well-established architectural design in the Gupta period. Cunningham found a slab containing their figures at Bhitari[192] which might well have formed the part of the lintel of a Gupta temple. They are also to be met with in several temples at Osia in Jodhpur[193] and almost invariably in the temples in Orissa. The figure of Ganesa is found over the entrances of the temples at Gowror[194], of the Parasuramesvara and some other temples at Bhuvanesvara and in a temple at Osia. The figures of Lakshmi, already referred to, are also to be met with in the Buddhist gateways and caves at Aurangabad, some of the Aihole temples, the Elura Kailasa temple, the Lingaraja and some other temples at Bhuvanesvara.

Figures of the main deity or its vahana were inserted from a very early time to indicate the nature and creed of the image inside. Thus the Gupta temple at Bhumara[195] has a beautiful bust of Siva on its door lintel. Even in a later age a Sivalinga occupied this position as may be noticed in a lintel collected by the Varendra Research Society (No. $\frac{I(b)15}{12}$) from Mandoil in the district of Rajshahi. The lintel over the doorway

(191) In the book on Orissa and Her Remains, Mr. M. Ganguly was unable to find any text associating Nandi with Mahākāla. The above list will show that they have been named together in the Meru Tantra. The Agni Purana (21 Ch.) also does the same thing. Also see Mayamatam (XXIII. 50.)

(192) Cunningham Arch. Surv. Rep., Vol. I. p. 94 ff.

(193) Arch. Surv. Rep. 1908-09.

(194) Cunningham Arch. Surv. Rep. Vol. VII, p. 13 ff.

(195) Mem. Arch. Surv. No. 16, plate 3(b).

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of the Laksmana temple at Sirpur in the Central Provinces[196] has on it a large figure of Vishnu reclining on the folds of the serpent Sesa. Down the two other sides of the door on the jambs are the figures of several Avatāras or incarnations of Vishnu, a feature enjoined by the treatises[197]. At Kharode the lintel contains a little image of Vishnu seated on Garuḍa. Similar image of Vishnu on Garuḍa are found in the Vindhyavasini temple at Tumain in the Gwalior State, perhaps dating from the ninth century A. D.[198] and in several temples at Osia. They are also common in the temples at Aihole. Thus Prof. D. R. Bhandarkar writes,[199] "The characteristics of the door frame of this period may now be noted. The first point that attracts attention is that very often on the innermost and sometimes on the second moulding we find Naga figures with hands folded, their snake tails follow the side of the lintel, in the centre of which a Garuda is found who holds the ends and who sometimes carries a figure of Vishnu. Another moulding is broken off into a number of panels usually containing pairs of lovers. To the right and left at the lower corner of the door-way invariably stand the two figures of Ganga and Yamuna. In the Cave temples these goddesses are generally sculptured at the top of the door jambs but in later times i. e. from the seventh to the tenth century, they come to be figured at the bottom. After the tenth century they almost entirely disappear. These characteristics are met with not only in Rajputana but also in Central India and the Central Provinces", fairly indicating their universal adoption.

Of the minor decorative elements, the auspicious vase with foliages on it occurs on the lintel over the doorway of a small temple at Aihole. The lotus and other creepers are almost

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(196) Arch. Surv. Rep. 1909-10.

(197) Hayasirsa Panchāratra quoted by Haribhaktivilāsa, Chap. 20.

(198) Arch Surv. Rep. 1918-19.

(199) Arch. Surv. Rep. 1908-9, "Temples at Osia".

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universally employed, as also the flying figures. The intricately coiled figures of serpents are found at Osia and at Puri and Konarka in Orissa. This custom was not unknown in Bengal as may be noticed on a door recovered from the ruins of Bangaḍ and preserved in the Rajbari at Dinajpur. Figures of animals such as lions, elephants, goats and of birds such as swans etc. are among some of the most common designs employed. Miniature temples and cornices are often found to decorate the jambs and the lintels of the doorways.

The division of the door-jambs into several perpendicular sections, as prescribed in the Silpa Sāstras, has already been shown as a common feature in the Buddhist caves. In the Elura Cave No. 6 the jamb is composed of three such sections; in some of the Ajanta Caves e. g. No. 6, the Indrasabha at Elura and the Salsette Cave they have five; in the two-storeyed cave below Meguti at Aihole are found seven; while the Ankai Tankai Jaina Cave No. 1 has nine sections in the door-jamb. Of the Hindu temples, three sections are met with in a Sivalinga temple at Elura, several temples at Bhuvanesvara and in many other temples. Five sections are found in the doors of some of the Gupta temples e. g. at Sirpur and in many later temples such as, at Aihole, Osia, Bhuvanesvara and so on. The door in the Bhogamandapa of the Jagannatha Temple and a surviving one at Konarka[200] consist of seven most beautifully decorated sections. The examples illustrating the regulations of the architectural treatises in this behalf are too numerous to be quoted at length.

In conclusion it may be shown that the sizes and proportions prescribed in the treatises about the doors and its different parts are found to have been more or less followed in many of the existing doors. As a very few ones have been thus examined, the following list may be of some interest as a preliminary attempt for further investigation.

([200]) Orissa and its antiquity, R. L. Mitra, Vol. II, plate.

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I. Buddhist Caves.

1. Nasik Gautamiputra Cave :—
   Width of the opening of the door = ½ (its height + the first moulding of the lintel)
2. Ajanta Cave No. 6 ;-shrine door in the lower storey :—
   Width of opening = ½ its height
   Width of the jamb = ¼ the height of the opening
3. Ajanta Cave No. 5 :—
   Width of opening = ½ its height
   Width of the jamb = ¼ the height
   Width of the whole door-frame at bottom = height of the door frame excluding the sill
   Width of the frame at the top = height of the whole door frame including the decorative piece above lintel.
4. Cave No. 4 Hall door :— (Ajanta)
   Width of the opening = ½ its height
   Width of the jamb = ¼ the height of the door including lintel and the architrave above
   The door keeper's height = ½ the height of the door.
5. Ajanta Cave No. 1 — Hall door :—
   Width of opening = ½ (height of opening + the height of sill)
   Width of jamb = ½ (height of opening + sill)
   Width of the whole door frame = height of it.
   Height of door keeper = ¼ height of the jamb on which it stands.

II. Bhuvanesvara Temples.

1. Southern Door in the Jagamohana of the Parasuramesvara temple.
   Height of door = 4′ 10″
   Width = 2′ 6″
   Width of jamb = 11½″
   Depth of jamb = 10″
2. Western Door of the same.
   Height of door = 5′ approximately

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Width of door = 2′ 7″
Width of jamb = 1′
Depth of jamb = 1′

3. Door of the Jagamohana of the Muktesvara temple :—
Height of door = 5′ approximately
Width = 2′ 5″
Width of jamb and lintel = 1′
Depth of above = 1′

Note. Here the width of the jamb is approximately one-fifth the height of the opening and not one-fourth as prescribed.

III. Two Doorframes in the Indian Museum, Calcutta.

1. No. MK4, 1848
Height of opening = 5′ 2″
Width of opening = 2′ 8½″
Width of jamb = 1′ 4½″

2. No. B. G. 89 (a)+(b)+88 B. G.
Height of opening = 4′ 11″
Width of opening = 2′ 5½″
Width of jamb = 11½″
Thickness of jamb and lintel = 7″

The above list will show that in all cases the proportion set by the treatises were approximately followed. The discrepancy found at Bhuvanesvara and also expected in many others may be explained by the fact that the date of the above texts and the locality of their use are not definitely known, and the specimens examined above might well have followed some other texts now unknown, for many such are indeed lost to us perhaps irrevocably. A further investigation is thus necessary to complete the enquiry which only will enable us to generalise the regulations of the architectural treatises. If the exact dimensions of the door or between the door and the image or the temple side may thus be calculated, the door jamb or a lintel or even a fraction of it will enable us to calculate the height of the image; or an image or any part of it will enable us to calculate the dimensions of the door as well as of the temple.

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CHAPTER XXV

Bricks in the Vāstusāstra

Many of the works on Indian architecture have given dimensions of bricks and the methods of their construction. We want to show here some of these references and draw a few conclusions from them. Scholars have said that size of bricks does not always determine the age of a structure. But it will be shown here that though size may not give any clue to the date, the proportion between the length, breadth and height of Indian bricks may suggest many things. Specially the proportion as laid down in the various texts on Vāstuvidyā is an interesting study which may itself be further intensified by scholars.

The works containing this matter may be divided into three groups :—

(1) Those works which prescribe the largest dimension of bricks ;

(2) Works prescribing smaller size.

(3) Works laying down various sizes and proportions and are often confused in doing the same. [78]

In the first group I have placed the Visvakarmaprakāsa, the Visnudharmmottaram, Hayasirsa Pancharātram, the I-S-G-Padhati and the Atrisamhita. It should be noticed that the first mentioned work is certainly, according to my opinion, a very old one. The other books, though perhaps late compositions, contain old texts. Moreover it will be noticed that except the first work of the group all others are mainly religious in character. This further supports the view explained by me before that oldest traditions of Indian architecture are to be found in the religious works and later Silpa works generally refer to later customs (Ch. XIII). These will be clear from the dimensions in the first group. According to the

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(1) Visvakarma Prakāsa bricks will be $18'' \times 18'' \times 6''$

(2) Visnudharmmottaram ... $18'' \times 9''$ (or $18''$) $\times 4\frac{1}{2}''$

(3) Hayasirsa Pancharātram (Saurakānda) ... $18'' \times 9''$(or 18) $\times 3''$

(4) I-S-G-Paddhati

(a) $18'' \times 9'' \times 6''$

or

(b) $9'' \times 4\frac{1}{2}'' \times 2\frac{1}{4}''$ and

other two dimensions in Angulas (c) $10 \times 5 \times 2\frac{1}{2}$

or

(d) $8 \times 4 \times 2$

(5) Perhaps also Agni Purana (See texts below)

(6) Atri Samhita ... $18'' \times 9'' \times 4\frac{1}{2}''$

or

$18'' \times 18'' \times 9''$

In this group, the first thing to notice is that the first three books allow $18''$ length. The I-S-G-P. also in one place contains the same size; but in another place recommends shorter sizes which we shall find also in the second group below. It thus gives various dimensions, which we have said must be the latest stage in the evolution of these rules. The work, undoubtedly a religious one, contains an earlier tradition but at the same time attempts a conciliation of the old one with existing circumstances, as this and other Agamas do in the matter of temples as well (See Chap. XV).

This $18''$ length prescribed for bricks undoubtedly indicates that this was the earliest size of bricks in India. This is not only to be inferred from what has already been stated above, but also from the fact that the earliest bricks discovered in India are almost of the same size. The Harappa bricks and the Maurya bricks testify to it. The mud bricks at the Nal cemetery and Nundara measure $21'' \times 9'' \times 3\frac{1}{2}''$ and $21'' \times 10'' \times 4''$ respectively, at Nal $23'' \times 9'' \times 3\frac{3}{4}''$, at Kulli $19'' \times 10'' \times 3''$ and at Dabar kot $21'' \times 10'' \times 3''$. (Bull. Arch. Survey-Ancient India-No 1, 1946). These sizes are larger than those

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mentioned before. It might be due to the fact that they were unburnt (See Manasara, below).

The second noticeable feature is regarding the proportions prescribed. According to the first work, length is the same as breadth and the height is $\frac{1}{3}$ of it. This may be tabulated thus:—

(1) Breadth = length
Height = $\frac{1}{3}$ Breadth

(2 & 5) Breadth = $\frac{1}{2}$ length
Height = $\frac{1}{2}$ Breadth (i. e. $\frac{1}{4}$ of length)

(3) Breadth = $\frac{1}{2}$ length
Height = $\frac{1}{3}$ breadth (as no. 1 above)

(4) Breadth = $\frac{1}{2}$ length
Height = $\frac{2}{3}$ breadth (i. e. $\frac{1}{3}$ of length) (in the first text)

or

Breadth = $\frac{1}{2}$ length
Height = $\frac{1}{2}$ Breadth (as no. 2 above).

Almost all the texts agree in allowing the breadth = $\frac{1}{2}$ the length. Regarding the height we find two proportions generally i.e. height = $\frac{1}{2}$ the breadth in some texts,

or height = $\frac{1}{3}$ breadth in some other.

The most curious thing to be noted is that the sizes and proportions fixed in the Visnudharmmottaram and the Atri Samhita exactly tally with those of the bricks that have been discovered at Harappa. This size and proportion i. e. length 18″ and breadth = $\frac{1}{2}$ length, and height = $\frac{1}{2}$ breadth may therefore be considered to be the oldest custom followed in brick-making. It is also noteworthy that the I-S-G-P. while retaining the size of North India does not follow the proportion (first rule) and while following the proportions reduces the size (in the second rule). We may therefore take the first rule to be the earlier South Indian one, differing from that of the North only in proportion. The later texts in the same work refer to later stages, when the proportion was same as in the early times of North India but the size was of North Indian bricks of

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a later period. This will be clear from the size and proportions laid down in the next group of works. Thus the proportion of the size of bricks in a very early period, it may be concluded, was height = $\frac{1}{2}$ or $\frac{1}{3}$ the breadth and breadth = $\frac{1}{2}$ length. This is supported by the size of bricks found in various ruins E. G. Harappa brick = $11'' \times 5\frac{1}{2}'' \times 2\frac{1}{2}''$ or $3''$ (Arch. S. R. 1920-21 p. 17); Maurya bricks of Sarnath $18''$ (or $19''$) $\times 9''$ or $10'' \times 3\frac{1}{2}''$ or $4''$, $17\frac{1}{2}'' \times 11'' \times 3''$. This size and proportion it may be said was followed from the time of the Harappa civilisation to the Maurya period.

Group II

In the second group I place the following works and respective sizes and proportions therein :—

(6) Agni Purana—$9'' \times 9'' \times 3''$ (or $18'' \times 9'' \times 3''$ as no 3 above).

(7) Hayasirsa Pancharātram (as quoted in Haribhakti-vilāsa)—$9'' \times 9'' \times$ (not clear) (may be same as no 3 above).

(8) Silparatnam—$9'' \times 4\frac{1}{2}'' \times 2\frac{1}{4}''$

Here we notice that the size has been reduced and the proportion in the Northern texts is : Breadth = Length and Height = $\frac{1}{3}$ Breadth, and in the Southern text the oldest proportion (i.e. Breadth = $\frac{1}{2}$ Length and Height = $\frac{1}{2}$ breadth) is followed and the size and proportion may be compared with the second text of the I-S-G-Paddhati mentioned in group (1). The size and proportion mentioned in no 5 and 7 have been observed in the bricks discovered in the excavations at Nagari E. G. $8'' \times 7\frac{1}{2}'' \times 2\frac{1}{2}''$ and $7\frac{3}{4}'' \times 7\frac{3}{4}'' \times 2\frac{1}{2}''$ (the date of the remains being perhaps of the Sunga period). This proportion I think was further changed in later periods both in North and South India, as may be discerned by examination of the bricks of the later periods. We give below some idea of it from actual finds :—

Sarnath bricks of Kushan period—(Cat. Sarnath Museum)

$16\frac{1}{2}'' \times 11'' \times 2\frac{1}{4}''$

$12 \times 9\frac{1}{2}'' \times$ (unknown)

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Same of Gupta period—$15'' \times 9'' \times$ (unknown)

Bricks found at Nagari—$14\frac{1}{2}'' \times 9'' \times 2\frac{1}{2}''$ (A. S. R. 1920-21)

$12\frac{1}{2}'' \times 8\frac{3}{4}'' \times 2\frac{1}{8}''$

Tiles at Besnagar— $14\frac{1}{2} \times 8\frac{1}{4} \times$ (unknown)

The proportions found here may be tabulated approximatly.

Breadth $= \frac{3}{4}$ Length and height $= \frac{1}{4}$ Breadth (or $\frac{1}{5}$).

This matter deserves further elucidation. But if we assume that in the Kushan period breadth became $\frac{3}{4}$ length, (see Manasara) in that case it may be said that most of the texts mentioned above may be said to be referring to the pre-Kushan periods. This may further support the theory enunciated before that these texts undoubtedly prove the existence of Vāstuvidyā in the Pre-Kushan period on which these texts were based. (Also see 'texts on bricks' below, last paragraph.) The sizes and proportion laid down in no (7) above, if compared with those in no (4) will indicate that the earliest rules of South India, are to be found in the religious works. It will also show that the Silparatnam, though a later work, contains better and earlier texts than those found in the Mayamatam and the Manasara, not only in matters of bricks but also in other respects, as has been discussed already.

Group. III

In it I include the Mayamatam and the Manasara. The Mayamatam lays down four kinds of sizes and proportions, Viz—(1) Angulas $8 \times 4 \times 2$ (3) $12 \times 6 \times 2$

or (2) $10 \times 5 \times 2\frac{1}{2}$ (4) $16 \times 8 \times 2$

The first and the second prescriptions may be compared with the third and the fourth rules in the I-S-G-Paddhati. The proportion in these two rules is Breadth $= \frac{1}{2}$ length and height $= \frac{1}{2}$ breadth as in the I-S-G. But the Mayamatam also includes later developments, in rule 3 i. e. height $= \frac{1}{3}$ Breadth, as in the works of Group I and II. This shows that the Mayamatam contains also early traditions. But the very fact that it gives so many alternatives indicates that a developed

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form of architecture has been discussed in the work. This is also apparent from comparing it with the Manasara.

The meaning of the verses in the Manasara referring to size of bricks has been misunderstood by Dr. Acharya, not for his own fault but because of the text itself. The meaning of the verses, if the text be taken as a correct one, is what Dr. Acharya thinks (Ind. Arch. p. 43). But it will come to this :—

Width = 7 to 30 Angulas.
Length = $\frac{1}{4}$, $\frac{1}{2}$ or $\frac{3}{4}$ more than breadth or twice breadth.
Height = $\frac{1}{2}$ width.

Now if this is the rule in the Manasara it will mean that the maximum size of bricks according to the Manasara will be approximately $39\frac{1}{2}'' \times 22\frac{1}{2}'' \times 11\frac{1}{4}''$ and the minimum $1\,1\frac{1}{2}'' \times 6\frac{1}{2}'' \times 1\frac{1}{8}''$.

We have not, as far as I know, got bricks of 40″ in actual specimens nor can so many sizes according to this text be possible in actual practice of brick-making. The text is undoubtedly corrupt in the book. The sizes mentioned as of the width must be those of the length and the second verse refers to diminishing of the width by $\frac{1}{4}$, $\frac{1}{2}$ or $\frac{3}{4}$ of the length as is evident from the word 'una' mentioned in it and the I. J. text given in critical notes (Manasara Text p. 81). In that case the maximum size will be $22\frac{1}{2}'' \times 17'' \times 8\frac{1}{2}''$ and the minimum will be $6'' \times 1\frac{1}{2}'' \times \frac{5}{8}''$ and that will also give the proportion of the length, breadth and height, at least in some cases as following :—

Breadth = $\frac{1}{2}$ length (as in all other texts) or $\frac{3}{4}$ length or $\frac{1}{4}$ length—which are not found in other texts but found in specimens of brick (See above). The maximum size mentioned here should be compared with that of the pre-historic bricks mentioned above.

Height = $\frac{1}{2}$ breadth, as found in many other texts, certainly very old ones (See Group I). But the minimum size laid down is absurd in practice. Thus the Manasara rules regarding

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bricks are based on very early traditions, but at the same time are confused to a very high degree, even if the text be corrected. This also proves that the Manasara text is later than that in the Mayamatam, and is a very confused compilation of a very late period. The absurd dimensions here are mere theoretical, as the names of the temples ending with the suffix "Kānta" also indicate.

I must say here that some North Indian texts are also corrupt but may be corrected easily. This discussion may throw further light on the dates of the extant works on Vāstu and may also help scholars in determining the age of the remains discovered, from consideration of bricks.

Texts regarding size of bricks

(1) Visvakarma Prakāsa Ch. 66. p. 55 (Venkateswar Edition) :—

"Caturasrāḥ Samāḥ Kṛtvā samantāddhasta-sammitāḥ
Vistārasya Tribhāgéna Vāhulyéna Susammitāḥ."

The verse is quite clear and 'Bāhulya' here cannot but mean 'depth or height' (See discussion Chap. XIX Appendix).

(2) Visnudharmmottaram (Part III Ch. 91),

"Hastadîrghéna Yantréna Tadardha Vistriténa ca
Tadardhocchritenātha Kartavyā Veṣṭakā Matāḥ"

Here for 'Bāhulya' is used "Ucchrita" = height.

(3) Hayasirsa Pancharātram (Patala 8-V. R. S. Ms.)

"Hastamātrāśilā Grāhyāś-caturasrā Susammitāh
Ardhahasté Grāhyā Vāhulyā Caturangulāḥ."

The text may be compared with no 1 above. In place of "$\frac{1}{3}$ of the breadth", here we find "4 Angulas" = $\frac{1}{3}$ breadth. The text also requires a bit correction; the word for 'Vāhulya' is here mentioned as 'Vāhanya' which, I think must be 'Vāhulya." Here 'Caturasra' may refer to the fact that leng and breadth may be equal, as we see in text, no. 1 above. In case the second line here may be indicating an alter This is also apparent in text no. 2 where also we fi before 'Iṣṭakā'. Both the texts no. 2 and 3, therefo nt

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have dropped some lines or words. But there is no difficulty in understanding the size even from the texts as they are.

(4) Isana-S-G-Paddhati (Part III. Patala 27).

(a) "Karāyatastadardham ca Vistṛtāṣṭāngulocchritaḥ"

(b to d) Angulaiḥ Samkhayā dîrghaḥ Jagatipamtyanuṣṭuvām
Kramāt Tadardhavistārā Vistārārdha Samucchrayāḥ.
[Jagati = 12 Angulas = 9″
Pamti = 10 Angulas
Anuṣṭuv = 8 Angulas]

(5) Atri Samhita refers to two alternatives, of which first one refers to Caturasra (square bricks) and a second one similar to those in no. (2)—

Tālonnatā Hastamātra, Chutrasrā Śilāḥ śubhā
Hastāyāmārdha-vistārā bhāgotsedhāśca Śobhanāḥ.

(6) Agni Purana Ch. 41 (related by Bhagawan Hayagriva)
Iṣṭakāśca Supakkāḥ Syurdvādaśāngulasammatāḥ
Svavistāra-tribhāgéna Vaipulyéna Samanvitāḥ
Karapramāna Sreṣṭhā Syācchilāpyatha Silāmayé."

The text is confused here. In the first line it is not clear whether length or breadth will be 12 Angulas. It may refer to both. The proportion of the depth (Vaipulya) is $\frac{1}{3}$ the breadth. The last verse says that the best dimension is "one cubit." This may also refer to both the length and breadth. In that case, the dimension given in Agni Purāna will be.

$18'' \times 18'' \times 6''$ (the best size),

or $9'' \times 9'' \times 3''$.

These alternative dimensions may be assumed to have been prescribed in this text too, as is discussed in no. 3 above. But as the Agni Purana was based on the Hayasirsa Pancharātram, I have placed this text in Group II along with the text below from the Hayasirsapancharātram quoted in the Haribhaktivilāsa.

(7) Hayasirsapancharātram in Haribhaktivilāsa (Vilāsa XX)

"Sutala Lakṣanopéta dvādaśāngula Sammitāḥ
Suvistāravibhāgena naipunyena ca Sammitāḥ."

Here very old is absurd

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he text is undoubtedly corrupt here. As it is it means : bricks "should be of even surface, of good qualities and 12 ulas in size. They also should have good breadth and pro- on (?) or divisions and shall indicate skill". The meaning ite vague and moreover if we compare it with the text (1) e, the real reading becomes apparent. Like the Agni ana text (5 above), the 12 Angulas may here refer to the gth and the breadth as well and the second verse may y be read as :—

'Svavistāradvi (or tri) bhāgéna vaipulyenaca Sammitāḥ". we read here 'dvi' for 'tri', it shows that the Hayasirsa cribes here the height to be $\frac{1}{2}$ the width as in text (2). if compared with the text 5 above, we may also read it as . In that case we find here an indication of the Hayasirsa being an earlier work than the Agni Purana as discussed re. But comparing the two Hayasirsa Pancharātra (Saura Visnu Kānda) texts with the Agni Purana, we may say this text also prescribes '4 Angulas' or $\frac{1}{3}$ the width as the other texts do. So the size may be

$18'' \times 18'' \times 9$ or $18'' \times 18'' \times 6''$ (as in text 1)

or more preferably $9'' \times 9'' \times 3''$ as in the Agni Purana. (12 Angulas in text)

These confusions also must have been due to the attempt to reconcile old texts and tradition with the actual custom of brick-making prevailing at the time of the compilation of these texts. The oldest dimension of bricks was, as I have already said, 18" in length, 9" in breadth and $4\frac{1}{2}$" in height, as in e Visnudharmmottara text, proportion being $\frac{1}{2}$ length = eadth and $\frac{1}{2}$ breadth = height. The later texts tried a recon- liation, reduced the size and changed the proportion of height to $\frac{1}{3}$ the breadth. This attempt further may suggest that as he oldest proportions laid in these texts may be verified in pecimens from Harappa, the Vāstu-works kept alive the raditions from the time of the Harappa civilisation down to he sixth century A. D. This also further suggests that burnt

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bricks continued to exist in India from 2500 B. C. to historic period. There was no gap between the two civi tions. The contention of scholars that burnt bricks did exist in India before the Maurya period cannot thus be acc ed. (See also discussions in Chapters IV, VIII and IX).

(8) Silparatnam ch. 14. 89-90. "Bricks should be c tructed having length of 12 Angulas (9″), breadth half of t (i. e. $4\frac{1}{2}$″) and height being half of width i.e. $2\frac{1}{4}$″ or it may less by $\frac{3}{4}$ (another alternative).

(9) Mayamatam ch. XV 118-19—The bricks should of 4, 5, 6 or 8 Mātrāngulas (i. e. in breadth). The leng (Āyatā) will be double of that. (The word 'Āyata' here must length, not breadth). They will be in height (Tibra) and $\frac{1}{4}$ respectively of the width.

(10) Manasara ch. 12. 95-97. It has been discussed abo

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APPENDIX E

Ābhāsa in Vāstu Sāstra

Abhāsa, according to Dr. P. K. Acharya, is a kind of material, a transparent substance, perhaps a sort of transparent marble, of which idols are made. ('Indian Architecure' Ch. LI, pp. 70-71 and 'Dictionary of Hindu Architecture' pp. 63-67). The word occurs in many verses in the works on Silpa-Sāstra, of which verses 1 to 12 in Chapter of the Manasara led Acharya to arrive at this meaning.

As Ābhāsa is included among the 9 materials of which idols are made, Dr. Acharya takes Ābhāsa to be one of the materials. The last four lines of the above verses have been taken by Dr. Acharya to contain the sub-divisions of Ābhāsa viz. Chitra, Ardhachitra and Ābhāsa and the meanings of these three words.

Now, Dr. Acharya interprets the words Sarvāngadarśyamāna as 'which can be completely seen through,' Ardhāngadṛśyamāna as 'only half transparent' and 'Ardhādṛśyamānam as partially (lit. one fourth) transparent. But in fact, these words should be translated respectively as one whose all parts are shown,' one 'the half of which is shown and 'one whose one-fourth is shown.' If we accept these meanings of these words, the last four lines cannot be taken as containing the subdivision of Ābhāsa; but, the author here gives the meaning of Ābhāsa which could not be clear on account of its being classed with the materials. If we accept the above meaning of the words, Chitra will mean a sculpture in the round or a complete structural building as the case may be, 'ardhachitra' will mean an 'alto-relief' or a representation of a structure in high relief or bas-relief and Ābhāsa will refer to a very low relief being a representation of

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a structure ("Paṭé bhittau ca yo ālékhyam") or a painting pr
per. The passages quoted by Acharya from Bhavisyapura
and Suprabhedāgama (Dictionary pp. 64-65) also clearly sh
that Ābhāsa and Ālekhya are synonymous. The verse
from Silparatna (46. 2-5) clearly shows that Ābhāsa is a kind
Chitra (also known as Chitrābhāsa). The four verses
Manasara so long discussed, therefore, clearly contain th
definition of Ābhāsa (in a crude way no doubt and vaguely, a
the Manasara always is) and not the subdivisions of Ābhāsa
Therefore the word 'Ābhāsa' cannot denote a transparen
material. In the Manasara verses, therefore, though Ābhās
is included in the other materials of idol construction, it wi
mean that 'an idol may be made of materials with which
painting is made' (i. e. colour, paṭa etc.) or 'may be made
the form of an Ābhāsa'. In similar verses as in the Isanasivagu
P. (Patala 91) we find the word 'Ābhāsa' replaced by "Dhā
Varnādyamālekhyam." It is because the word does not
to a material proper that the author of the Manasara took
to explain in the last verses what he meant by Ābhāsa.
Silparatna passage and Suprabhedāgama passage quoted in
Dictionary by Dr. Acharya clearly show that Abhāsa
Chitrābhāsā are synonymous. This is clear from the last v
of the Manasara which says "Ābhāsa should be made w
five colours on Bhitti or Paṭa."

Colours in making an 'Ābhāsa' therefore are materials an
hence, Ābhāsa also has been taken by the Manasara as a ma
terial. The Samarāngana (Ch. 76) also refers to Lekhya an
Chitra as two materials for images. The word Ābhāsa literall
does not mean simply splendour, light, transparency, the mean
ings which Dr. Acharyya took in his book on Indian Archi (p
71) but also means "semblance, looking like, having the appea-
rance of a thing" (M. Williams, Apte's 'Dictionary.') In Silpa
Sāstra therefore the literal meaning of Chitrābhāsa will be
"having the semblance or appearance of a Chitra", a kind of
Chitra in its wider sense, a mere representation of a temple,

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building, idol and the like, either in sculpture in the form of low relief on abhitti etc. or a painting on paṭa.

This is further proved by the Silparatnam chapter on materials for making images (Part II Ch. 1 verse 21 and 48-52) in which 'Mṛinmaya', and 'Lekhya' are mentioned as two kinds of images. The matter is elaborated later on where 'Mṛinmaya' image is further divided into 'Āmam mārttikam' i. e. of unburnt clay, and 'Pakkalingam' i.e. images of burnt clay. After that it is said "That is called 'Lekhya Vimba' which is depicted on walls etc. with colours." This is what Manasara also means by 'Ābhāsa' and so explains the words more clearly in verse 6 (Ch. 51). Ābhāsa is not a material but refers to images depicted in painting with colours of five kinds.

The Silparatna also describes this 'images in painting' the subsection ('Atha Mṛidaḥ') dealing with images made clay. That the Manasara lines appear to be corrupt also evident from the corrections made by Dr. Acharya himself. This is a further illustration of confusions made by the compiler of the Manasara who copied without understanding many things. Dr. Acharya himself says that 'Ābhāsa' and 'Ālekhya' mean the same thing (Dictionary p. 65), but still he thinks that both indicate some 'material.'

The other meaning given to this word by Acharya viz. "a class of building" is also not true to the point. The meaning of the word is referred to in connection with the verse—

"Jāticchandam Vikalpam tu Ābhāsam tu Caturvidham" (Manasara ch. 19. 1) and another verse in the Kāmikāgama (L. 13).

In both these places none of the words 'Jāti', 'Chanda', 'Vikalpa' and 'Ābhāsa' mean a class of buildings but four different methods of depicting the figure of a temple or building. 'Jāti' is a real structure in the round or main-temple, 'Chanda' is not a real structure but 'something like a structure', such as the representation of temples on the temple-Sikhara itself (as

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found on many temples); 'Vikalpa' is perhaps the figure of structure made in sculpture in high or low relief, as found o pedestals of temples, over images and such others, and 'Ābhāsa here also means the figure of a structure painted with colour on walls and paṭas. Though the meaning of Chanda an 'Vikalpa' here cannot be definitely ascertained, there is n doubt that 'Ābhāsa' here too, as in cases before mentioned refers to the painting of a temple and not a class of buildings The Vaikhānasāgama dealing with Prākāra (Patala VII) refers to Ābhāsa and Vikalpa of the Dvārasobhā etc. and in place of Chanda and jāti uses the words 'Madhyama' and 'Uttama' respectively. This shows clearly that in case of temples too we may take the words jāti, Chanda and Vikalpa to refer t the best, middling and a still lower type of temples resp tively i.e. the main temple, the smaller ones in the compo the representations etc.

Thus 'Ābhāsa' in both the cases means 'having the blance of' and neither a material nor a class of structure.

In the Oriental Conference at Patna 1930, Dr. Acharya ther tried to support his theory even after Dr. Coomaraswam had come to the same conclusion as has been discussed her (J. A. O. Society—1928 and 1932). His arguments were base on the reference to a 'snowy sand' mentioned in It-sing' account as a material for image-making and on the assumptio that the Suprabhedāgama or the Silparatnam were really mis taken in explaining the word as 'Ālékhya' and that Silparatnam was a mere summary of the Manasara whereas the Manasara being the standard work could not have misrepresented things. But It-sing's 'Snowy sand' must be identified with 'Sarkarā' of the texts. I have already shown above that it was the Manasara which, in this chapter, as in many other places, gives a confused account and text, and not the Silparatnam or the Suprabhedāgama. Moreover, these two works, I have already shown, have not taken anything from the Manasara but from other works. Regarding the proposed identification of Ābhāsa

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omething like glass, it may be said that the Manasara a book of not earlier than the 11th century could have referred to the word "Kāchamani", if anything like glass ed in image making at the time when it was composed. sa refers to a material what will be the meaning of Chitrārdha and Chitrābhāsa ? The meaning also will the classification of temples and other structures into nda, Vikalpa and Ābhāsa." Dr. Coomaraswamy takes this word to mean 'painting'—but it perhaps also the very low reliefs.

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early

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CHAPTER XXVI

Origin of Temples

We have already discussed the various forms of temples and Indian conception of these religious strgs What information may be gathered regarding the temples from the study of the architectural treatises be considered.

Temples in some form must have originated a image worship came into vogue in India. If imager in some form had existed among the non-aryans of temples must also be regarded as a pre-Vedic fac not concerned here so much with the pre-histori with the Hindu temples, incidentally, however, that early period.

Long before the Matsyapurana, the Visvakaya and the Bṛihatsamhita, Indian temples had not onl but assumed various forms. Temples existed her Gupta period. In and after the Gupta periode base temples testify to the developed form of the Hir-sing' But what was the origin of the Northern s Southern one of the Hindu temples is a vexly mis Various opinions have been expressed regardin (E. G. See R. Chanda : Rupam 1924 ; Coomara of I. I. Art ; Dr. Ramannaya : Origin of South I Saraswati—JISOA 1940, and Indian Cultur p. 189 ; S. Kramrisch JISOA etc. Longhurst—A. S. R.—S. circle 1916 etc). But none of the solutions appear to be sufficient to explain the origin completely.

First let us consider the terms used to signify a temple. In all ancient literature (The Epics, the Sutras, the Arthasastra etc.) temples are referred to as 'Devālaya', 'Devāyatana', 'Devakula' 'Devagṛiha' etc. These terms indicate that

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the ancient temple was a 'house' of the Gods. No especial word has yet been created to signify a peculiar structure in which the Indians placed the images of their Gods. The earliest temples, therefore, were designed after the models of the residential houses—there was no difference between a 'Gṛiha' and a 'Mandira' (temple).

When we come to the Vāstusāstras we find that 'Prāsāda' is the most general word used to indicate a temple. This is true especially of the North Indian Vāstu texts and the Gupta Inscriptions. The South Indian texts, refer to temples mostly as the Vimāna and the Harmya, and occasionally as Prāsāda. Later on in the South all these terms were used synonymously. One thing to notice is that the word 'Mandira' which is the most commonly used word nowadays is altogether absent in the earliest known inscriptions and literature, though in later Southern Vāstu texts it has been taken as a synonym for 'Prāsāda' or 'Harmya' (Mayamatam' XIX. 10-12 Manasara III etc). The Northern texts, however, indicate that the term 'Mandira' has a technical meaning. The Visvakarmmaprakāsa (IV. 13) defines the Mandira thus : "A house made of stone is a Mandira." We have traced the word 'Mandira' in the Kadambari (7th century A.D.) and in a quotation from Hiranyagarbha in Bhaṭṭotpala's commentary. In all other early texts, literary or epigraphic, the most commonly used word to indicate a temple is 'Prāsāda.'

The other words which were later on taken as synonyms of a temple (Prāsāda) have of course been found in very early literature. But it is doubtful if in those early texts, those words have been used to signify a temple, Thus, the Vedas contain the word 'Harmya', but it perhaps refers to a strong house (or a kind of building used for residential or fortification purpose—Vide Chap. II). The Epics contain the words Prāsāda, Harmya, Vimāna in many verses, but whether they refer to abodes of Gods or merely big palaces cannot be made out from the contexts. On the other hand

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it has been already pointed out that the epics make a distinction between these various terms—Prāsāda, Harmya, Vimāna, Saudha etc. (Chap. V and VI), They at the same time refer to temples as merely 'houses of God' (Devāyatana etc).

These discussions therefore indicate that all these words which were later on taken as referring to temples were not originally signifying the same thing. Even the word 'Mandira' later on meant a 'house' and used as such in later literature. But in ancient times each of these words indicated a different sort of structure. Each had a different shape and form, which later on was forgotten by the laymen and even the writers on Vāstuvidyā and the lexicographers. Some of the characteristics were, however, known to some lexicographers (See Appendix F).

The commentator Buddhaghosha makes a distinction between the 'Prāsāda' and the 'Harmmya.' The Vinaya Pitakas know this distinction (See Ch. VIII). Even later Silpa texts were not altogether ignorant of the distinction. In describing the gateways, the Mayamatam (Ch. XXIV. 32) (and some other South Indian Vāstu texts also) says that "Dvāraprāsāda is one which has a similarity in form to that of the Prāsāda and Dvāraharmmya has the shape of a Mālikā and so on.' They, therefore, clearly distinguish a Prāsāda from a Harmya, sālā, Sabhā and a Gopuram. The Samarāngana Sutradhāra (Ch. XIII. 10) also defines a Harmya as "the upper storey of a house", which is of course not clear at all.

The distinctive characteristics of these various structures (The Prāsāda, Harmya, Vimāna) may give us a clue to the origin of the Indian temples. First let us discuss the characteristics of a Prāsāda. A Prāsāda is always described as a many-storeyed (seven-storeyed, generally) structure in the Jataka stories, the Ramayana, the Mahabharata and the lexicons. In the Epics and the Jatakas, a Sikhara or 'Sringa' is also almost always associated with a Prāsāda. The Gupta inscriptions (even of Kumargupta's time) also in many

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passages refer to the Sikhara of the Prāsādas. In the Mahābhāshya of Patanjali (I. 1. 9) there is a reference to the 'Prāsāda' and the 'Bhumi' (the storey or upper part of the Prāsāda). Thus we find that even before the second century B. C. Prāsāda was a structure with a Sikhara and having many storeys on the top (i. e. in the Sikhara). But we cannot be sure if in this period it meant both a residential as well as a religious structure. In the Ramayana, the 'Chaitya Prāsāda' might refer to a religious structure. In the Vāstusāstras of the earliest period (the quotations in Bhaṭṭotpala's commentary, the Visvakarmaprakāsa and the Matsya Purana) 'Prāsāda' came definitely to mean a 'temple' having a Sikhara of many 'bhumi's (or storeys). The North Indian temples (Prāsādas) with a towered Sikhara containing many 'bhumis' must therefore have originated before the 1st century A. D., if not the 2nd century B. C. (Probable date of Garga). Before the Matsyapurana, there arose at least 20 kinds of Prāsādas in India.

Another characteristic feature of the North Indian temple (Prāsāda) was the Āmalaka (or, the Āmalasāra, Āmalāsthi, Āmalakasāra etc.) the well-known crowning piece under the Kalasa. The antiquity of the Āmalaka has also been proved by the discovery of Amalaka capitals at Besnagar (A. S. R. 1913-14 p. 189 ff. pl. LIV (a)) of the second century B. C., and on the pillars in the Amaravati sculptures and the Mathura sculptures (vide 'Mathura Antiquities' by V. A smith pl. LVII). Coomaraswamy (J. A. O. S. 1928 p. 282) refers to the occurrance of the word 'Āmalaka' in the Cullavagga in connection with the legs of a chair.

From all these discussions we conclude that :—

(1) The Prāsāda was a many-storeyed building.

(2) It was differentiated from all other types of structures in ancient literature.

(3) It existed at the time of the Buddha and even perhaps before him (Cullavagga).

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(4) The storeys and Sikharas of Prāsādas are known to very early literature.

(5) The Āmalaka was also a very favourite decorative motif with early Indians.

(6) Prāsādas were sometimes constructed over a Chaitya (Aryan or non-Aryan).

(7) It is invariably the term applied to indicate a temple in all North Indian Vāstu texts.

The word in earliest times perhaps meant a 'palace' 'a palatial building of many storeys and other peculiar forms. It was in a later period perhaps that temples also were built after the model of the Prāsāda type of buildings and hence it is that the word is used in the Silpasāstras to invariably mean a temple, whereas in early literature a temple is not mentioned either as a Prāsāda or Harmya or Vimāna or Mandira, but simply as a 'house of the Gods'. (See also below)

Like the Prāsāda, the Harmmya was another class of ostentatious structure. Its shape was different from that of the Prāsāda. The Cullavagga refers to it. The Arthasastra refers to the Kumari's temple being in shape 'Munda Harmmya'. Buddhaghosha explains Harmmya as a building with a Kuṭa on the top (Ch. VIII). The Mayamatam (Chap. XXVI 100) defines the word as "a sālā with a Sikhara having the shape of a Munda." From these references we may come to two conclusions.

(1) That the Harmmya building with which South Indian Silpa texts identify the Vimāna, was a structure like the South Indian temples on which we find a munda (Head) i. e. the Stupi and also the 'kuṭas' i. e. the chapels on the cornices all around the Sthupi.

(2) The Harmmya might also be the flat-roofed buildings with a small chamber on the roof, as the word 'Munda' may also mean 'mundita' (shaven) i. e. without any Sikhara (tower). In this sense it might be similar to the Gupta temples. But

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the Gupta inscriptions invariably calls a temple by the name of a 'Prāsāda'.

The most commonly used word for the temple in the South Indian Vāstu texts (especially the later ones) is 'Vimāna'. Dr. V. Ramannaya has referred to the existence of Vimāna class of buildings in ancient India from innumerable references to it in early literature. But those references do not give us any clear idea about the form of the Vimāna buildings. We also, in fact, cannot even learn from them definitely if Vimānas were temples or residential buildings. The later lexicographers and South Indian Vāstu works take 'Vimāna' to mean a temple[201]. The commentator of the Ramayana (Vide chap. on Ramayana) says that Vimāna was a chariot and a house of seven storeys. From this we may conclude that Vimanas might have been seven-storeyed buildings having the shape of a chariot. From the Ramayana again we learn that the Vimanas were placed on the top of Prāsādas, as the expression 'Prāsādāgra Vimāneṣu' indicates. In that case, the Vimānas with which the South Indian temples are always identified, might have been the buildings similar in form to the South Indian temples and built in imitation of chariots. This may partially support the view of Dr. Ramannaya about the origin of South Indian temples. But the origin of North Indian temple-Sikharas from chariots, as held by scholars like Havell, Coomaraswamy etc., cannot be supported for the following reasons :—

(1) In ancient India, chariots as well as houses were made of wood and bamboo. The curved bamboo, which is supposed to have given shape to the curvilinear Sikhara, might have been used in the construction of both houses and chariots. We therefore cannot say if houses (Vimānas) were

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(201) In the chapter, on 'Sālās' the Mayamatam defines 'Vimāna' as "a Sālā with a 'Sira' is a Vimāna". The use of the word 'Sālā' here is also significant; for 'Sālā' was also a special kind of structure, not any building.

as

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made in imitation of the chariots (Vimāna) or chariots made after the house models.

(2) If both the northern Sikharas and the southern temples (with storeyed upper part) were made after the model of a chariot, it is not clear how the Sikharas of North Indian temples differed totally from those of the South. It is, therefore, more likely that Northern chariots were made in imitation of North Indian houses, and Southern chariots were made after the model of South Indian houses, and not that houses were made after chariot models.

(3) In ancient literature houses have been compared to chariots (see ch. on Mahabharata). In such passages the houses were called sometimes Prāsādas and sometimes Vimānas. The north Indian Vāstu texts refer to a class of temple called 'Vimānacchanda' or 'Vimāna'—indicating that some temples might have the shape of a chariot, and not all. In actual specimens too we have got temples similar to chariots, as the Sun temple at Konarka (Orissa), or the Mamallapuram Rathas.

(4) In fact, the word 'Vimāna' according to the earliest known lexicographer Amara meant only a 'Chariot' and not the Vimāna type of buildings (though the Ramayana and Mahabharata references show that Vimāna therein referred to buildings).

(5) The earliest South Indian texts call temples by the term 'Prāsāda' and not Vimāna, as the later texts do. The earliest temples of South India, therefore, could not have been built after chariot models, though the later 'Dravidian' temples might have been so modelled.

(6) The word 'Ratha' got a technical meaning with reference to the North Indian temples (projections of the walls), while in South India it meant a chariot, as in the case of the Mamallapuram Rathas.

The references to Vimānas in early literature, therefore, do not supply us with any definite information about the

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structure and shape of the buildings of that name, and we cannot even say if all Indian temples had their origin from chariots.

Later writers of Silpasāstras, however, confused the two meanings of Vimāna and have written that Prāsādas were built after the models of the chariots of the gods. The Samarānganasutradhāra (Ch. 49) describes the origin of temples in the following way—"In ancient times Brahmmā created five Vimānas (chariots) for the Gods, fit for travelling through the air; and Prāsādas having the same forms were built of stone, burnt bricks and wood, in order to decorate the cities." This tradition must have originated in a late period due to the confusion in the two meanings of Vimāna on the one hand, and the meanings of the words Prāsāda and Vimāna on the other. No reliance can, therefore, be placed on these later writers on Vāstu who could not distinguish between a Prāsāda, Harmya, Vimāna etc.

The origin of Hindu temples from the Buddhist stupas and Chaityas has also been another suggestion of scholars. Dr. Ramannaya has very ably tried to prove that stupas were not peculiarly Buddhist structures, that stupas existed even before the birth of Buddhism and that the later development of the Buddhist stupa into temple-like form was due to the influence of Hindu temples on them after the 4th or 5th century A. D. It may be added here that we may trace the existence of a kind of stupa even in the Vedic period (See Chap. II). The Satapatha Brahmana records the tradition of Aryan stupas being built of four sides and Asura stupas being round in shape. The Buddhists therefore generally followed the Asura round models. Dr. Ramannaya has traced the custom of erecting stupas among the Billavas of South Canara (origin of S. I. Temples p. 48). In fact, even in North India, sand stupas are made at the time of Srādh as ceremony at Gaya. The association of funeral customs with the stupa is thus an universal practice with the Indians—

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Aryans or Non-Aryans. Dr. Dubreuil has attempted to identify the pre-historic Mennapuram cave and the Sudama cave with the Vedic graves, It may be added that the Son-bhandar cave at Rajgir also has some similarity in its inner part with a stupa. There is nothing to show that the Rajgir cave was Buddhistic and not contemporary with the Jarāsandha-ka-Vaithak which is also probably a pre-Mauryan structure.

Dr. Ramannaya has also tried to show that Chaityas were also pre-Buddhistic structures and hence early Hindu temples might naturally be similar to such Chaityas. The early literature shows that the word Chaitya had various meanings. It meant a fire-altar, a sacred tree and also a structure. The 'Chaitya Prāsāda' mentioned in the Ramayana shows that a Prāsāda (temple) was often built on a Chaitya. Here Chaitya might mean a fire altar or a sacred tree. It is quite likely that though scholars have taken the word 'citi' (from which Chaitya is derived) to mean a fire-altar, it may also mean a funeral pyre (Citā in Bengali). Even nowadays Maṭhas are erected in Bengal over the place where a man is burnt, and often a Sivalingam is placed inside the Maṭha. The famous Rajābari Maṭha, now destroyed by the Padma river, was such a structure. It is quite likely that Chaitya trees were trees planted on the Chitās, in case no Maṭha could be erected over the place. This is also the custom in Bengal. The Chaitya Prāsāda was a Maṭha (temple) erected thereon. It is perhaps for this that in the Epics, cities are described as full of Chaityas. The account of Megasthenes that spoliation of sacred trees were punished with death may also be thus explained. Of course, even besides these, tree worship might have existed among certain Indian tribes. The Mohenjodaro and Harappa seals (Marshall's Mohenjodaro Chap. V) also prove its existence in prehistoric India. All these show that Chaityas were not peculiarly Buddhistic structures and that the Buddhists had taken their models from the Aryan or non-Aryan structures called Chaityas. In fact Chaitya was a

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general term for temples, as some later lexicographers take it to be—constructed by non-Aryans in their tree worship (or as 'Chaitya' is explained by the commentator of the Ramayana as a house of the God of Rakshasas), by the Aryans around the fire-altar or the funeral place, and later on by the Buddhists.

That the Chaitya is also primarily associated with funeral customs is also apparent from the fact that the features of the Chaitya must have originated from the stupas. If we cut the stupa in the middle from top to bottom, or say, if we enter inside a stupa, the inner side will look exactly like a Chaitya. At the end will be an apsidal or round wall and above the head will be the vaulted roof. The Sudama cave, the Lomasa Rishi and Junnar caves point to this fact. When round stupa (which was also pre-Buddhistic) became the favourite object of worship by the Buddhists, they wanted to place this object of worship inside a covered place, as the Hindus too did with their images, or the ashes of the dead (on the Citā.) They took the model of their temples from the Stupa itself and put another Stupa inside. The rows of pillars inside a Chaitya represented the rails which existed around the Stupa, the sacred trees or Citās. Thus in construction of the Chaitya the Buddhists perhaps followed the old Indian models of a round Stupa. (For another plausible origin see next chapter).

Only a few Deccanese temples have been found similar to the Buddhist Chaityas. It is not advisable to conclude from only those few specimens that Hindu temples originated from the Buddhist Chaityas. The earliest known Hindu temples (the Gupta temples) are flat-roofed. The plan of most of the Hindu temples is square and not apsidal. The mouldings on temple-Sikharas are not similar to anything found on Buddhist Chaityas. The descriptions of these mouldings in the Vāstusāstras indicate that there was no similarity between them and those on the Chaityas.

On the other hand the Cullavagga indicates that Prāsādas

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which existed before the rise of Buddhism were also adopted by the Buddhists. A sculpture at Bharhut contains an inscription showing that the figure therein is of a Prāsāda. (Fig. 43 in Coomaraswamy H. I. I. Art). It was such Prāsāda's which were the temples of the Hindus both in the earlier and later periods (when the Vāstu works were written). 'Viharas' also were perhaps originally Hindu establishments (see Cullavagga and Chap. XXVIII). All these indicate that in the constructions of temples, it was the Buddhists who were indebted to the early Indians, and not that the Hindus were indebted to the Buddhists.

Besides the Prāsāda, there were several other kinds of temples in India. The Bharhut Gateway, Mathura sculptures and Amaravati sculptures contain representations of temples which were not at all similar to the Buddhist Chaityas. It is one of them which is called a Prāsāda. Of the others some have got circular domes on them, some consist of square cells and oblong roofs. The points of difference of these structures from the Buddhist Chaitya are obvious (Coomaraswamy figs. 41, 43, 45, 46, 142). The railings round these figures need not necessarily be Buddhist rails, but might have been taken from earlier models of rails round sacred trees (figures of which are also found at Bharhut and other sculptures). The origin of the horse-shoe arches has been traced by scholars to wooden structures and if that be the case, they also could not have been an invention of the Buddhists but must have been copied from houses of that period. The representation of such windows on temple Sikharas, therefore, need not be taken as pointing to the Buddhist origin of Hindu temples.

The next thing to be discussed is the origin of the Sikharas of Northern temples. Most of the scholars are of opinion that curvilinear Sikharas began to appear in the late Gupta period. That does not however, preclude the existence of some kinds of Sikhara in an earlier period. The Bharhut sculptures of

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the second century B. C., the Sanchi sculptures of about the same period, the Amaravati and Mathura sculptures of the 1st and 2nd century A. D. and the Bodh-Gaya plaque of about the same time indicate the existence of round domes, oblong domes (Bharhut), curvilinear towers (as in Mathura sculptures) and square-edged pyramidical towers even before the Gupta period. The Kharavela inscription, as Dr. Jayaswal points out, also refers to the existence of 'Sikharas' in the 2nd century B. C. or the 1st century B. C. Coomaraswamy has therefore, said that the Indian temple-Sikharas had their prototype in the early representation of towers found in sculptures of different places of India. The Vāstusāstras also clearly indicate that long before the Matsyapurana, North Indian temples had not only towers (Sikharas) on them but also these towers had assumed various forms. These Sikharas, therefore, had developed neither from Rathas (Chariots) or from the Buddhistic Chaityas. The curvilinear tower was undoubtedly a later development of early Indian towers.

Coomaraswamy further supports Fergusson's view and observes[202] that the "Nagara shrine really represents a piling up of many superimposed storeys or roofs, much compressed. The key to this origin is the Āmalaka ; properly the crowning element of a tower; its appearance at the angles of successive courses shows that each of these corresponds in nature to a roof. Thus the Nagara and Dravida towers both originate in the same way." This view appears to be partially correct from the study of the Vāstuvidyā. The northern Vastu texts in describing the Prāsādas (temples) say that the Prāsādas might be many-storeyed. The southern texts also refer to Vimanas of various storeys. The temple Sikharas, both of the north and the south therefore really represented various storeys ; in the north, they are compressed ; in the south "the storeyed principle is never lost sight of". But so far the view of Coomaraswamy appears to be correct. But the question

(202) Hist. of Indian and Indonesian Art, p. 83.

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arises why and how this difference between the Sikharas in the two schools arose. In the case of northern Sikharas, the key to the origin viz. the Āmalaka is found not only on the top but also in the angles. This is also supported by the Vāstu Sāstras[203] of the northern school. But the Āmalaka is altogether absent in the Dravidian style. Thus it appears that even if we "take into account the primitives of the two types" (as Coomaraswamy asks us to do), we find that in both the towers the same storeyed principle is working but in two different ways. This difference may indicate that originally the northern Sikharas also contained actual storeys, as the Drāviḍa ones. But there is no proof of that state of affairs; nor of the fact that the Northern Sikharas were imitations of Southern Sikharas. The facts stated below will rather show that at one time, the Drāviḍa temples imitated the Northern ones. In northern texts the storey of the Sikhara is invariably called 'Bhumi', the southern texts call it generally "Tala or Bhumi". Though these two terms are identical, did they originally differ in meaning, the 'Bhumi' referring to compressed storeys and 'Tala' to storeys proper? The square-edged Sikhara of the original Bodh Gaya temple (the Bodh Gaya plaque) also indicates a stage when in Northern India the Sikharas were compressed storeys. Thus if actual storeys ever existed in North India, it must have been so in a very early period, when the 'prāsāda' really had many storeys and were houses of the kings or the rich, as the word Prāsāda indicated even in later times. It is quite likely that Prāsādas (as palaces) had seven storeys; it was only after they were used as temples that they gradually got at first 12 storeys and then still later, 16 or 17 storeys. It is apparent from the earliest descriptions of Prāsādas and the injunctions that residential houses could not have more than 7 storeys. Thus we may surmise that when the model of a king's house (Prāsāda) was

(203) Hayasirsa Pancharātra (ch. 13)—Koneṣu bhumau bhumau catasro=malāsthikāh."

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adopted for making a temple, the North Indian people compressed the storeys, as there was no necessity of the storeys in a temple. The North Indian Sikhara and temples were therefore not based on the models of chariots, but on that of the Prāsāda type of buildings which were originally houses of the rich or the kings.

The curvilinear Sikhara with the Āmalaka on it, according to Stella Kramrisch (J. I. S. O. A. XII. p. 188) "presupposes a central shaft which having traversed the entire body of the Prāsāda would emerge above it, support, and be rivetted in, its crown, the Āmalaka". This type of Prāsāda, if it existed, must have been like the "one pillared Prāsāda" mentioned in the Jātaka stories (see chap. VII). This also supports the existence, in a very ancient period, of a type of house with a central post as has been concluded from the study of the Gṛihya Sutras (see chap. I and IV) and explains the great importance attached by Indians to that Central post and the central place of the building site (See chap. I and IV). Dr. Kramrisch's contention that the term 'Prāsāda' was originally the name of a temple, and later on was applied to palaces, cannot be supported. In early literature, Prāsādas perhaps always meant a palace ; and temples were designated simply as 'Deva Gṛiha, Devāyatana etc." It was in a later period, therefore, that temples were constructed after the model of a palace (Prāsāda) ; in earlier times temples had various other forms (as found in Bharhut sculptures etc.)

The South Indian temples similarly were originally based on the residential houses of the Deccan (Vimāna type of buildings, which perhaps in earlier days did not mean a temple) and preserved the semblance of storeyed structures (the Vimanas), while in the North, the storeyes were made very compressed. That the South Indian temples were based on residential houses of the Deccan is further proved by what has been stated about the two kinds of temple classifications (of Prāsādas and of Vimānas) found in the South

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Indian Vāstu texts. (See Ch. XIII, pp. 148-50). This is further indicated by the fact that the Vimāna, according to the Mayamatam, was a Sālā (a residential type of building) with a 'Sira'. Moreover, while the classification of temples of North India differs so much from that of the Deccan, the classification of residential houses (Sālās) in almost all the Southern texts agree with that of the houses of Northern India. (See Table 7). This happened, because in construction of residential houses, the old traditions (common to both North and South India) were preserved ; but regarding temples, the Vāstusāstras of the South had to adjust their accounts with the new style of temples that arose in the Deccan.

In the Samarāngana Sutradhāra (Chapter 49) it is related that the Vairāja chariot was meant for Brahmmā, Kailāsa for Siva, Pushpaka for Kuvera, Manika for Varuna and Trivishṭapa for Indra. The North Indian temples were also called by these names (Vide Ch. XV) according to their being square, round, rectangular, oval and octagonal respectively. Thus even if we take the tradition as a late one, it however, connects the square (chariots and) temples with Brahmmâ, round ones with Siva, rectangular ones with Kuvera, oval ones with Varuna and octagonal ones with Indra. The Samarāngana Sutradhāra, however, does not explicitly connect the temples of each of these forms with the above mentioned gods respectively. But in South Indian texts we find particular gods associated with particular kinds of temples (See Ch. XIV). This idea must have developed in a later period. The classification of temples in the Atri Samhita, and the names of pillars in all the South Indian texts viz Brahmakānta, Vishnukānta, Isakānta, Rudrakānta, Skandakānta, Indrakānta, Kuverakānta etc. also similarly associate the form of a structure with a particular god. Comaraswamy writes "Nor can a clear distinction of Visnu or Siva temples made in the Manasara and followed by Havell and Diez, be recognised in medieval practice" (H. of

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India. Art p. 106). The conception, therefore, though not really found in practice, had undoubtedly developed in India. But there is no doubt that it was of a later origin and cannot therefore, be taken to explain the origin of the Indian temples of various shapes.

As towered temples have not been discovered in South India before the 6th century A. D. many scholars have traced influence of Buddhist Chaityas on the origin of those temples. The earliest known South Indian temples—the Chezarla (4th century) and Ter (about 450 A. D.)—really bear similarity with the Buddhist Chaityas. Dr. Ramannaya has shown that the Mamallapuram Rathas also bear similarity with temples depicted in the Bharhut sculptures. The towered temples depicted on Amaravati and Jaggayyapeta sculptures also go to support Ramannaya's contentions. But in explaining the similarity of Ter and Chezarla temples with Buddhist chaityas, he has said that South Indian temples arose without being influenced by the Chaityas.

This he has done by reference to the earlier structures of South India—the dolmen temples, the hut shaped temples. the Sudalaimadan shrine and the Toda Boaths. He therefore concludes that "the hutshaped temple was super-imposed upon the dolmen shaped and the result is the modern South Indian temple". He has further said that the "Dravidians learnt the art of constructing Vimanas from the Aryans who came to the South much earlier than the time of the Buddha" and therefore there is no necessity of thinking that the Dravidians borrowed the idea of Vimana from the Buddhists. But then he has to show why the same art assumed two forms—one in the North and the other in South. He has to show that in the intermediate period i. e. between the age of coming of pre-Buddhistic Aryans to South India and the age of the existing Dravidian temples, there were, in South India, buildings constructed in the style of Bharhut or Bodh Gaya etc. which he has failed to do. He had therefore to take recourse to

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what he thinks to be the other styles of South Indian structures.

We shall have, therefore, to find out how much of truth exists in the contentions of Dr. Ramannaya. First, regarding his references to the South Indian village temples, it may be said that the system of erecting temples on the spot where a dead man is burned, as has been shown, is not peculiarly South Indian. In Bengal the custom of erecting 'maṭha' on the place where a man is burnt (generally if burnt in the compound of the house of the deceased or his own land) is still prevalent and temples of Smasānesvara Siva are found not only in South India, but also in the North.

Secondly, the Sacred Tree and Gods living under trees is also not a peculiarly South Indian custom.

Thirdly, the Toda Azarams and primitive temples, (as Longhurst also tries to prove) might have led to the plan and the prākāras of the South Indian temples, but surely not their exterior and upper part. The hut shaped temples also are not peculiarly South Indian. They are found in North India as well. His contentions about cars having connection with funeral rites might be of South Indian origin, but their connection with gods is found also in North India. I have already discussed how far cars can explain the origin of Indian temples.

Regarding the Toda Boath, Dr. Ramannaya himself finds only very little difference between them and the North Indian temples. He therefore explains this matter by referring to imitation of this style by the North Indian people at the time when the Aryans first came to India. But it is not clear at all how this type of Sikhara gave birth to the 'Vimana' of the later South Indian temples. Dr. Ramannaya (p. 68-71) has therefore, to admit here that the "Boa shrine superimposed on the dolmen temple" was further subjected to Buddhistic influences and culminated in the production of the style of architecture which we see at Mamallapuram." The Sudlai madan pillar also is quite like a North Indian Sikhara temple.

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The similarity of the graves of priests at Mudabidri and of the Sathmahal Prasad of Ceylon with the South Indian temples is more striking than that of the other South Indian structures mentioned before. But it must not be forgotten that the hill tribes of India are living side by side with the cultured Aryans for such a long time that it is difficult to distinguish from amongst their culture, the primitive ones from later customs borrowed by them from their Aryan neighbours. The surviving dolmens in the Deccan may give an idea of the earliest South Indian temples, but they are not sufficient to explain the real origin of the forms of the later Dravidian temples. Thus what Dr. Ramannaya and Longhurst think about the origin of the South Indian temples can only partially explain it.

Dr. Ramannaya's contention that the Mahabalipuram Rathas were not the earliest temples of their kind, however, is very true. There were certainly temples in South India before the 6th century, as is proved by the inscriptions referred to by him (His Book p. 63-64) ; and some of those temples might have been similar to those depicted in Ajanta paintings and Amaravati sculptures which were akin to figures of temples found in Bharhut and Sanchi sculptures. They, however, cannot be taken to really explain the forms of the Dravidian temples of the later period. Dr. Dubreuil's contention that Mahendra Varman began to execute in stone the same form of temples as existed in brick or timber before him is also note-worthy (See Chap. XXVIII). But what was the form of the pre-pallava temple has not been explained by any scholar. (It cannot be done with reference to cars, as done by Dr. Ramannaya).

We shall, therefore, attempt now to find out the possible nature of temples of the South in the pre-pallava period. This can be done only with the help of the Indian Vāstu works. In the 6th and earlier centuries there were works on Vāstu Vidyā in the North as well as South India. As I

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have already said, the study of Northern Vāstu works indicates that the Gupta temples of flat roof were preceded by various other kinds of temples in North India; so do the Vāstu works of the Deccan indicate the existence of temples in South India before the rise of the Dravidian style. Most of the available treatises on South Indian architecture, however, describe the Dravidian style, as shown by me before. Some of the texts, however, will come to our help in examining the matter in hand—I mean the Āgamas, or at least some of them and some references in the Silparatnam and the Isana-S-Paddhati. I have tried to show in various ways that the religious works containing texts on Vāstu Vidyā though compiled in a late period, contain the earliest traditions. On that criterion (except in case of the Silparatnam) have I selected these texts as our guide in this matter.

From the study of these books, as I have already pointed out (Ch. XV), we know that besides the various names of temples (which were made in Dravidian style) having one to twelve storeys, there were in South India two or three other methods of temple classifications in which the names of temples and their number are more similar with those found in the Northern works than with those in the other Southern treatises. This will be clear from the tables of temples attached. We again discuss the matter here in some detail. The Suprabheda Agama mentions twelve varieties of temples beginning with 'Meru, Mandara, Kailasa and so on. Here we find the names are mostly given after the names of some mountains, some of Northern, and some of Southern India. The Silparatnam and I-S-G-Paddhati contain a list of thirtytwo temples in which some of these twelve names are also included. There is another list of twenty temples in both the Silparatnam and the Isanasivaguru P. in which some of the names are similar to those found in the Suprabheda-Agama and some names are almost similar to the names of North Indian temples. Thus these works having three lists of South

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Indian temples not only contain many names of North Indian temples but in the process of nomenclature also follow the North Indian method. The Silparatnam itself and the Mayamatam contain another list of temples which are classified according to number of storeys and hence are undoubtedly the later temples in the Dravidian style. The Manasara contains a list of names which agree very little with the lists previously mentioned. The number of temples in all these also points to the fact that while the Suprabheda Agama contains twelve names, the Silparatnam and the Isana-Sivaguru-P. contain twenty in one list and thirtytwo in another. The Mayamatam contains fourtyfive names and indicates existence of many others not mentioned (because it gives description of temples having one to four storeys only; and regarding those having eight to twelve storeys gives only general instructions without mentioning names). The Manasara contains names of 98 temples which do not tally with those in other works. This comparison therefore clearly indicates that before the rise of the Dravidian style, there were in South India at first twelve, then twenty, and then thirtytwo kinds of temples differing not only in names but also in form from the Dravidian temples, and that many of these early South Indian temples might have been similar to the North Indian temples. Unfortunately for us the Silparatnam does not give details of these temples, a fact indicating how the Silparatnam, being a later work, intentionally suppressed or thought it unnecessary to give the details of those temples because they were extinct by the time it was written. It, therefore, described only storeyed temples, built in the Dravidian style. The Suprabheda Agama being a short religious work could not give much of the details. The Isanasiva-G-P. however gives some descriptions. The Suprabhedāgama, as already said before, contains references to the characteristics of the Dravidian temples—its Sthupi, storeys upto twelve in number—as in the other Southern texts. But in the description

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of these early temples, it does not follow the classification according to the number of storeys. The I-S-G-Paddhati also describes these temples in the manner of the Agamas. These descriptions are, however, too meagre to give us a clear idea of the form of these temples. But I think it will not be a mistake to conclude from these works that there was, before the rise of the Dravidian style in the 6th century A. D. (or a bit earlier), another style prevalent in South India. There is also a great possibility of some of these temples having been in many respects similar in form to the North Indian temples. It is also remarkable that the earliest Southern texts (Mayamatam and others following it) while describing the Sikharas refer to eight kinds of the height of the Sikhara, all of which are named after North Indian countries[204]. It is also in these early classifications that we find temples are called Prāsādas as in the Northern texts, whereas in the later texts the word used is Vimāna or Harmmya (In the Kāsyapasilpa, a very late work, however, all these terms are synonymous—showing the confusion that arose in later times).

That the South Indian (Drāviḍa) temple had a different form in an earlier age is also supported by the Hayasirsa Pancharātram Ms. In describing the Drāviḍa temples it says (Ch. 19) that its 'Śukanāsikā' shall be adorned with 'leaves and creepers'. Now, Śukanāsā or Nāsikā has been taken by scholars to refer to the curvilinear Sikhara (O. C. Ganguli—Indian Architecture and also Stella Kramrisch in J. I. S. O. A.). The Hayasirsa reference to the 'Śukanāsikā' of Drāviḍa temples will therefore go to show how South Indian temples also were at one time built over with a curvilinear tower, though the Hayasirsa itself says that in place of Āmalaka, there was something else at the top of the Sikhara (as has already been noted before). If this view be not

(204) Mayamatam XVIII. 10
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accepted then we are to change our opinion about the real character of the Śukanāsā. The passage is quoted below.

नागरेन प्रमाणेण कृत्वा जंघांश भूमिका ।
ततोधिकंतु यत्कर्म द्राविडंतत् प्रकीर्तितम् ।।
कपोतकमसूरानि अर्द्धेनाधोमुखानि तु ।
स्तम्भावनियुता जंघा पत्रवलयोपशोभिता ।।
मेखलान्तरपत्रानि तथैव शुकनासिका
प्रासाददेहे तेषान्तु वालस्वः (?) सर्वतः स्थिताः ।
कपोतौ चन्द्रशालाच श्लक्ष्न स्तम्भयुतं गलम
अमलसारकस्थाने +++++++तेषामधोमुखी ।।
प्रमेयं द्राविडी प्रोक्ता.....

If we accept this view, it will prove that for a long time South Indian architecture had been under the influence of North Indian architecture. This will explain how the Deccanese temples were also later developments of the temple-style discovered in the Bharhut, Mathura and Bodh Gaya temples. This may also partially explain how the Chezarla and the Ter temples and the Shahadeva's Ratha at Mamallapuram could be similar to the Buddhist Chaityas without being imitations of those Buddhistic buildings (the earliest North Indian traditions being continued in the South till the time of these temples). This North Indian influence will also account for the similarity of the Durga temple and the Hucchimalligudi temple at Aihole (of the sixth century) with the North Indian temples. The Dravidian style had already arisen in the South, but temples continued to be built in the older style. Even in the cave no. 3 of the time of Mamalladeva, Longhurst notices the influence of northern masons in construction of the pillars (Pallava Architecture Part II p. 14). We have not then to assume, as Dr. Ramannaya has to do, that the similarity of the Dravidian temples with Northern temples arose out of the coming of the Aryans to the South earlier than the time of the Buddha—an argument which is defective as not supplying the

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intermediate link. Though the influence of local (South Indian) structures on the Dravidian temples cannot altogether be denied, Dr. Ramannaya's other contentions cannot be fully accepted. The facts stated above also remove the necessity of acknowledging Buddhistic influences on the Dravidian temples (or on the Boa shrine superimposed on the dolmen temple, as Dr. Ramannaya thinks). This, therefore, reveals to us the form of the pre-pallava temples of the Deccan. The difficulties noted above about the origin of Southern temples from a car are also removed by this (For origin of the Sthupi see Ch. XXVIII).

Once we accept the influence of North Indian Sikhara temples on the architecture of the Deccan, we may presume that at first the Dravidian temple style was a further development or a slight variation of the North Indian style influenced by local conditions and traditions. The later South Indian temple-Sikharas of Dravidian style were perhaps the imitations of Indian residential houses of the Vimāna type (or Sālās with a tower, as the Mayamatam defines it—see p. 69). The subsidiary structures found in a Dravidian temple might have originated from already existing ancient South Indian buildings of other types. Thus from another point of view, I have come to the same conclusion as Mr. Saraswati did about the origin of the Dravidian temples. "There can be no doubt" writes he (Indian Culture VIII p. 189), "that the Dravida temple is an adaptation of the earlier storeyed form of the Gupta temple, enriched further by elements in the matter of details, which may be said to be of local origin". I, however, object to the use of the "Gupta temple" in this observation of Mr. Saraswati, as I have said so many times before and also in this chapter, that storeyed form of the North Indian temples had originated much earlier than the Gupta period. What I have said here about the origin of the Dravidian style will also explain the Dravidian features which Mr. Saraswati discovers in the Parvati temple at Nachna Kuthara and the Siva temple

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at Bhumara, and the Lād khan temple at Aihole. This also accounts for the Northern and Southern types occurring side by side at Aihole and Pattadakal. I cannot also agree with Mr. Saraswati, for reasons stated so many times in this book, in his contention that the Gupta period "supplied the basic foundation of the subsequent Indian architecture". Nor do I accept his statement that the history of the two styles—Nāgara and Drāviḍa, or at least of the Nāgara, should be associated with Indian architecture which was only subsequent to the Gupta one. The Drāviḍa style, as I have shown, existed from the Brahmana period if not earlier, in fact from the pre-Vedic period. The origin of the Nāgara style will be discussed later on. The Gupta period cannot also be regarded as the "formative and the creative" age of Indian architecture. The earlier North Indian and South Indian temples have disappeared, but that does not prove that Gupta period saw the rise of temple architecture. The Vāstu Sāstras may prove my statements.

Wa have already discussed the question if Hindu temples had originated from the Buddhistic structures. It has been shown that it was the Buddhists who copied the Indian structures, the Prāsādas, the Harmmyas, Viharas, Chaityas, Stupas etc. which had been existing from the pre-Buddhist period. It will not be here out of place to discuss the question whether Indian architecture can be classified into Buddhist, Jaina or Brahmanical styles of architecture. Eminent scholars have nowadays rejected that system altogether. Coomaraswamy says that "a sectarian classification..... is quite misleading". His view we may further support from what has already been written before in this chapter. All buildings—Buddhist, Jaina and Brahmanical—were built in the "Indian style of their period." Here it may be pointed out how the Buddhists also imitated the Hindu styles. Besides the Prāsādas, Harmmyas, Stupas and Chaityas (as discussed before) we find in actual specimens of Buddhist

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art, that the Buddhists imitated Hindu temples. A Sarnath door lintel, of the Gupta period (Cat. Sarnath Museum plates XXV ff.) undoubtedly of a Buddhist building, contains the figure of a temple which has an Āmalaka at the top. We have already shown that the Āmalaka was a peculiarly Indian motif the existence of which may be traced to the 2nd century B. C. and even in the Gupta period. We may take this, therefore, as a clear evidence of the fact that the Buddhists here built in the Brahmanical style of the Gupta period or as Coomaraswamy writes "the Indian style of their period." The chapter on the Indian doors (Ch. XXIV) also indicates how even in the construction of doors of their temples the Brahmanical (better, Indian) traditions of architecture were followed by the Buddhists.

We shall then discuss if Fergusson's classification of Indian architecture on 'ethnical principles' has any truth in it—whether Indian architecture may be classified into Indo-Aryan, Dravidian and Chalukyan. Regarding this matter, we have already shown that in the earliest period there were in India undoubtedly two kinds of architecture—the Aryan and the non-Aryan (which included that of the Asuras and the Nagas) or the style of Viswakarmâ and the Drāviḍa style. (also perhaps a Naga style). That was, however, in the dim pre-historic past, for, with the dawn of the historic period, we find all the various Aryan and non-Aryan styles of art (and other aspects of culture too) thoroughly assimilated into one style, the Indian. It was the remembrance of this earliest stage that led to the classification of Indian architecture into Nāgara and Drāviḍa, as found in the works on Vāstu Vidyâ. In the historic period, slight variations only could be found among these two styles, and in later periods local variations of these two led to the rise of various orders based on Geographical and time factors—viz : the Vesara, the Lāṭa, the Vairāṭa, the Bhumija, Kalinga, Andhra etc.

In the next chapters we shall deal with this assimilation

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ɔture with the non-Aryan ones and also
of there Nāgara was a later development of the
shape of North India, and the 'Dravidian' style
was a later form of the old Drāviḍa style. It
, that the word 'Dravidian' has been used by me
the South Indian architecture after the sixth cen-
. and the word 'Drāviḍa' to refer to the earlier non-
rchitecture of India which, as shown before, was not
ed only to the South.

The Indian architecture, therefore, was not based on
arian principles, but was undoubtedly the outcome of the
ture of ethnic and geographical factors.

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APPENDIX F

Meanings of Prāsāda in the Lexi

1. Amarakosha :—
   'Syāt Prāsāda Devakulam'. (Cf. Purushottama
2. Abhidhānachintāmani (Hemchandra)
   "Prāsāda Devabḥupānām"
3. Abhidhāna Ratnamālā (Halāyudha)
   Gṛhamiṣṭakādiracitam Prāsāda Devatānarendrānām.
4. Commentary of Ramayana
   "Prāsādaḥ Tribhumikaḥ"
5. "Vimano=stri devayāné Saptabhumau ca Sadm

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CHAPTER XXVII

ion of Aryan and non-Aryan Cultures in the Vāstusāstras

Aryan a; Aryan influence on the Deccan and its architecture limited
Of course a well known fact. But scholars were so long at
loss to explain how the Northern temples and the Southern
s(Dravidian) temples could evolve almost at the same time
m5th century A. D.) in two diffent ways. They, therefore, had
make the assumption that both these styles of temple
chitecture were influenced by the Buddhist stupa and the
itya. It was due to the prevailing idea that there
temple architecture in the North before the Gupta
lat roofed temples were first created in the Gupta
hen came those with the Sikharas. But as indicated
ile the Matsya Purana, and the Visvakarma Prakāsa
ribe twenty types of temples and as moreover, the
ana text was based on others of a very early period
ich might be pre-Buddhistic or at least not later
century A. D.), it is not difficult to conclude that
tecture had grown up in India long before the
. Dr. Jayaswal's belief that the Nāgara archi-
o called because it was evolved by the Bharasiva
tween the 2nd and 4th century A. D. need not
See Ch. XXVIII) if we remember that Nagas
ng before the Bhārasivas rose into power.
(II. V. 26) shows that Garga learnt
nomy from Seṣa Naga. We have shown
earliest authority on Indian archi-
ggested that Garga was the founder
der the inspiration of Seṣa (perhaps
aswal has placed in about 110 B. C),

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That of course need not mean that no temple architecture existed before that period. It might be that the oldest Indian architecture was different from the Nāgara in that (see next chapter) it was brick and wooden architecture and the Nāgara one was of stone. But until the history of these ancient Nagas of India be definitely known, it cannot be said if the Nāgara architecture really was the creation of the Bharasiva rulers or it was in any way associated with the Nagas of ancient India. The existence of pre-Gupta Sikhara-temples in any case cannot be denied.

The Buddhistic influence which has been discussed already is definitely absent in case of these Sikhara temples of the North. This is also certain that there were temples in South India built in the Northern style before the Dravidian style originated. But the temples at Ter and Chezarla really present some difficulties due to the apsidal form of the ground plan. The form of the roof has been explained above. As regards the ground plan we may acknowledge some indebtedness to the Buddhists. But it must be remembered that the early Dravidian temples did not follow this apsidal form in the ground plan. The temples at Ter and Chezarla which exerted no permanent effect on Dravidian art may therefore be regarded as two examples of exotic origin, due to the influence of Buddhism which prevailed also in the Deccan (see next chapter).

Then comes the question of Aryan influence on Dravidian architecture. Though it has been suggested above that the Dravidian temples arose as the result of the existence of older temples of Northern style in South India, that does not mean that all the South Indian temples before the 6th century were constructed in the style of North India. That there undoubtedly were temples built in a different style, is indicated by the fact that the earliest names of temples of South India found in the available texts (as discussed before) were not all similar to those of the northern temples.

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These early temples of South India, like those of the North, have not yet been discovered or have been totally destroyed.

It is not at all difficult to assume that when the Aryans came to the Deccan they influenced not only their religion but also their art. This is also apparent from the study of the Vāstusāstras. It has been already said that a Vāstuvidyā was existing among the Drāviḍas from the time of the Brahmanas if not earlier. The writings of Maya, Nagnajit, Nārada, Sukra existed among the Drāviḍas long before the Sixth century B. C. It has also been suggested that though originally there was some difference between the Vāstusāstras of the North and those of the south, a time had come when the same essential principles were followed by both the schools. The North Indian people acknowledged the authority of the Southern architects and those of the South did the same regarding the North Indian architects (Vide the list of writers of Vāstu in the Matsyapurana (and the Agni Purana). Though Viswakarmā was primarily a North Indian authority he was acknowledged as such by the South Indian writers of architectural treatises. I have further shown that many North Indian texts were also adopted by the Dravidians and given new forms by them (Vide Ch. X, XIII above) to suit their own architecture. It was in a very early period that the North Indian temple style must have influenced the South Indian one. In what period of history this occurred is difficult to solve. If the Nāgara style is associated with the Nāgas, we may assume that the Nāgara architecture also spread to the Deccan after the Andhras when the Nagas were rulers thereof.

Several factors regarding the last point may be suggested. A perusal of the early chapters of this book will show that from the sixth century the two schools became more independent of each other. The Dravidian style was now evolved in the south and new treatises were written solely devoted to this new style (but religious works could not give

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up the old traditions, because a house built in a new fashion might cause some danger to the owners or builders of houses) and divisions of Nāgara and Drāviḍa temples were fully remembered. The Bṛihat Samhita refused to accept the opinion of Maya and Nagnajit. We may, therefore, conclude that from the 6th century the assimilation of the two arts again stopped. Going backwards we find that scholars are of opinion that the spread of Aryan culture in the South had taken place before the time of Panini i. e. 7th century B. C. or at least before the Nandas (4th century B. C.).

We may have a glimpse of a still earlier period from the study of the Brahmanas. The story of Nagnagit in the Aitareya Brahmana indicates that his opinion was rejected by the author of the Brahmana because he belonged to the Drāviḍa school. If Nagnajit was an architect king of the Vedic period, as Late J. C. Ghosh wrote, we may say that this difference between the two schools had grown up even in the Rigvedic period. But it must be borne in mind, as also noted before, that the difference between these two schools in this age too was very slight and not essential. The Brahmana indicates that the Dravidians of that time had taken to building of the fire-altar and the study of the Vāstusāstra (of definitely Vedic origin). This shows that the Dravidians were already converts to the Aryan culture, though they perhaps had retained their individuality to a certain extent. In the period of the Satapatha Brahmana they were building Smasānas, but round in form. Thus we may conclude that a mixture was going on between the Aryans and the Drāviḍa culture (including their art) in a period earlier than the latest phase of the Rig-Vedic period. The Rigveda certainly was completed at a time when the two races had already been amalgamated[208]. During the discussions about bricks (ch. XXV) it has been also pointed out that the traditions of the Harappa bricks were

(208) The references to Asuras and Devas as being born of the same parents might be attempts to reconcile the two races,

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accepted and continued by the Aryans of a very late period. Those scholars who believe that temple architecture was learnt by the Aryans from the non-Aryans shall have to prove the age when this event took place. Marshall is of opinion that though icons were known to the Mohenjodaro people, no building can be definitely identified with a shrine. If temple architecture arose after this period, it is really difficult to say who, amongst the Aryans and non-Aryans, were indebted to the other for temple building. The Aryans might have accepted the non-Aryan gods at that time, but that will not prove that their temples were also creations of the non-Aryans. Further light on this matter may be thrown only with the full realisation of the nature of the Indus Valley culture. But the Vāstusāstras definitely fills up a gap between the earliest civilisation and the Vedic culture of India.

A further picture of the stage when the assimilation between the Aryan and non-Aryan Vāstuvidyā was taking place may be gathered from the story of the Vāstunara found in all Vāstu texts. A summary of the story is given here as described in the Matsyapurana (Ch. 252).

"During the war of Siva with the Asura Andhaka a terrible being was born from the sweat of his forehead and drank the blood of the Andhakas who had been killed in the battle. But as he could not still satisfy his hunger, he began to perform worship of Siva who gave him a boon viz. capacity to devour the three worlds. He then covered the three worlds by his body. The gods, Danavas, Asuras, Rakshasas all got freightened thereby and surrounded him, along with Brahmma and Siva. The demon could not move any more by being pressed in different parts of his body by different gods. As the gods also remained on his body, he was called 'Vāstu' (Literally a place where gods and people live). After that Brahmmā gave the demon a boon to the effect that the Yajna performed for propitiating Vāstu at the time of construction

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of a structure will be his food. From that time the Vāstu yāga ceremony became prevalent in this world."

This is the story related in practically all the books. The Visvakarma Prakāsa says that the war took place in the Tretā yuga. The matters to be noticed in this story are many. First of all, the occurrence is of a very early date. Secondly, though the incident occurred during a war between Siva and the Andhaka, Asuras took the side of the gods in suppressing the Vāstu demon. The story therefore may contain a hint that the Aryans and non-Aryans of India began to worship Lord of Vāstu found in the Rigveda where he is identified with Indra and other gods. (See Ch. I). Does the story contain a suggestion to the effect that both the Aryans and non-Aryans learnt architecture from another common source and that the ceremonials connected with house building were performed by both the Aryans and non-Aryans? As the ceremonials are found in the Vedas, we may infer that this system began in the pre-Vedic period. The worship of Vāstu is also found enjoined in all the works of South India. The story therefore suggests that if the Aryans were indebted to the non-Aryans for architectural principles or vice versa, the exchange of ideas took place in the pre-Vedic period.

The story of Nagnajit and Prahlāda as related before (Chapter X) also indicates that there was an Asura or Dānava or Drāviḍa school of architecture not only in the Deccan but also in the North of India. The Satapatha Brahmana further places the Asuras in the eastern parts of India. The identification of the Asura school with the Dānava school of Maya, as hinted before, will indicate the existence of a Drāviḍa culture in the North India. If the Dravidians came from outside by the North-western passes and left traces of their language in the Brahui language, we may guess another legacy of theirs in the form of a Northern and an eastern art. The Mohenjodaro culture was identified by late R. D. Banerjee with the Dravidian one (Also Dr. S. K. Chatterjee in Modern Review).

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If that culture be similar to that of the ancestors of the Assyrians, the Asuras of the Indian literature might also be identified with the people of the Indus Valley. The Asuras, the Dānavas and the Drāviḍas, therefore, become identical. It also points to the fact that the culture found at Harappa and Mohenjodaro spread at one time over the whole of India and the Himalaya region and even beyond (Maya being associated with the Kailasa Mountain and Nagnajit's friend and preceptor being the king Prahlāda of Balkh who himself was also an expert in Chitravidyā, a matter intimately connected with the Vāstuvidyā).

The fact of the existence of a Drāviḍa art in Gandhara region, as hinted here by the story of Nagnajit and Prahlāda, may also be supported by actual history of Indian art. Mr. J. C. Ghosh tried to show similarity of the Mohenjodaro art with the Gandhara Art, regarding the qualities of those arts. We may, however, notice even similarity of the South Indian art with the Gandhara Art, which may be explained by regarding these two arts as branches of the same stock. The influence of Gandhara art on that of Amarāvati has so long puzzled the scholars. It could not be explained how the centres of these two arts being separated by such a distance could exert influence on one another without leaving any connecting link in the intermediate localities. We may now say that as both the arts were offspring of the same mother stock (viz. Drāviḍa art), the similarity is quite possible and natural. Similarly, in another matter we find the similarity of South Indian architecture with that of the Gandhara region. In the following passage is quoted Fergusson's opinion : "Among the sculptures of the Gandhara monasteries are several representing facade of buildings. They may be cells or Caitya halls, but, at all events, they are almost exact reproductions of the facade of this Ratha" (i. e. Sahadeva's Rath of Mamallapuram.— Fergusson Indian and Eastern Architecture vol. I, p. 336 f. n. (2) and woodcut no 123, page 216). "Being used as frame

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works for sculpture, the northern examples are, of course, conventionalised ; but it is impossible to mistake the identity of intention". These similarities might not have been accidental, but were the results of ethnic or cultural affinity of the South Indian and the Gandhara peoples.

This has been further suggested by Dr. Kramrisch (J. I. S. O. A. XII p. 198). "The plan of the Buddhist Rock cut monasteries in Ajanta, Nasik etc. does not differ in principle from the stone-built Buddhist monasteries in Gandhara". She therefore, suspects that Viharas which existed before the rise of Buddhism were adopted by the Buddhists later on. She has found similarity of the court of the Stupa at Takhti-Bahi with open air temples found in many places in India ; "But it is also preserved in the surrounding wall of cells of some of great temples set up by the Pallavas in South India: the Shore temple at Mamallapuram and the Vaikuntha Perumal temple at Conjeevarum." All these similarities may not be accidental.

The relation of the Mānasāra (or Agastya's work on architecture, of which Manasara was a later compilation ; and Agastya was primarily a North Indian sage) with Vitruvius, as already explained, might also have been due to the existence of the Drāviḍa Vāstuvidyâ in the Northwestern parts of India where Greek architects and Drāviḍa ones combined to give birth to the existing Gandhara art. These discussions may throw further light on the early civilisation of India and the Drāviḍa culture.

Further light on the influence of the Asuras of the North-West and Eastern parts of India on Indian architecture may be thrown by the administrative history of the Samghas. Panini refers to a class of Samghas called the 'Āyudhajîvi' and Kautilya also mentions them as 'Sastropajîvin'. According to Panini they were in Vahika and Trigarta in the Punjab, the Yaudheyas, Parsus, Asuras and Rākshasas. Similarly we get in the Arthasastra the names of "Rājasabdopajivi" Samghas in Eastern India viz the Licchavis, Vajjis, Mallas ; and in the

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North-west the Madrakas, Kukuras, Kurus and Panchalas. Dr. Bhandarkar has discussed (Charmichael lecture no IV) in this connection that many of these Samghas were foreigners. I think that Panini's 'Ayudhajîvin' and Kautilya's 'Rājaśabdopajîvin' are identical. The inclusion of Asuras in this list and the existence of such Samghas in Eastern India are further proofs of the existence in the North-west India and Eastern India of an Asura culture. The word Rājasabdopajivi and Rājanya of the Brahmanas also, therefore, appear to be variations of the same word. The Rājanya Nagnajit of the Brahmana was identified with the Asura king in the Mahabharata, thus verifying Panini's statement that the Āyudhajîvi Samghas were found amongst the Asuras. The Arthasastra further proves the existence of these Rājanya or Rājasabdopajîvi Samghas in Eastern India. It is because these Licchavis were Rājanyas (or Asuras) that they were called Vrātya Kshatriyas. 'Rājanya' therefore may be taken to be the caste to which the rulers of the non-Aryans, the Drāviḍa rulers of old, were relegated when they had accepted the Aryan culture. They were not 'Kshatriyas' but 'Rājanyas' or 'Vrātya Kshatriyas.'

Late Ramaprasad Chanda had suggested that the Kshatriyas were perhaps the old rulers of the non-Aryans who had submitted to the Aryan priest (Arch. S. Memoirs) It is suggested here that they were originally called Rājanyas as the Vedas call them, and later on Vrātya Kshatriyas and were not given equal position with the Kshatriyas. It might be that those who accepted the Aryan culture in toto were made Kshatriyas, but those who still retained their old habits, customs and some features of their religion and art were Vrātya Kshatriyas and continued to be Rājanyas whose opinions (as that of Nagnajit) regarding a construction could not, therefore, be acceptable to the Aryan sage of the Brahmanas. The Rājanyas differed from the Aryans not only in religion and art but also in their form of

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government. They preserved their democratic constitutions which were perhaps the oldest form of government of the Asuras (Drāviḍas) in India. It is because the Rājanyas were descendants of the Asuras or Drāvidians, that the Southern Vāstu-works of the Drāviḍas assigned the 'Drāviḍa' temples to the Kshatriyas (Rājanyas in later periods were taken as equivalent to Kshatriyas) and Nāgara ones to Brahmins. (See Pisharoti in Indian Culture). This tradition was, therefore, preserved in those Vāstu texts, as the form of the Nāgara temple of the Brahmins (or Aryans) was remembered to be a 'square' one, even long after the original significance of the caste names and names of architectural terms Nāgara and Drāviḍa was forgotten in India. This further proves that the Drāviḍa Vāstu-works of even later periods were based on very old texts containing old traditions of Indian culture.

Besides the Asura influence on Indian architecture, we may trace also the influence of another non-Aryan tribe on it. It was the Nāgas. The two styles Nāgara and Drāviḍa indicate that though Nāgas of ancient India and Asuras (Dānavas or Drāvidians) were sons of the same parents as recorded in the Indian traditions, they differed in their culture, if not ethnologically. Asuras cannot be therefore totally identified with the Nagas as has been done by Dr. A. P. Sastri (JBORS vol. XII.). As the Asura culture continued to exist in various parts of India even upto the time of the Buddha (the Republican States of Eastern and Western India) so did the Nāga culture in some parts thereof (as at Rajgir and Taxila[206]), as is indicated by so many legends of Buddha's life. These Nagas also preserved old traditions of their art and contributed later on to the growth of Indian architecture—the origin of the Nāgara Art.

Regarding the story of the 'Vāstu Purusha' narrated

([206]) I am indebted for some of these references to Nagas to my colleague Mr. B. P. Majumdar whose article on the Nāgas has been published in the Patna University Journal Vol. II, Nos. 2, 3, pp. 72-93.

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above, it has been suggested that the Aryans and the Asuras might have learnt architecture from a common source. This common source might have been the Nāgas. In fact, some of the Vāstu works call the Vāstu a Nāga (Vāstunāga). It might be that the story gives a hint to the fact that when the Aryans (Siva who had already been accepted as a God by the Aryans) were fighting with Asura Andhaka (were they the ancestors of the Andhrakas or Andhras ?), suddenly the Nagas appeared on the scene and made an attempt to conquer India. The Vāstunara is said to have originated from the sweat of Siva. This shows that the Nāgas were related to Siva. Siva might have been really the God of the Nāgas (See also B. P. Majumdar's article in Patna University Journal). The whole story, therefore, may be taken to be referring to the fact that the Devas (Aryans) and Asuras (Dravidians) accepted Vāstuvidyā and architecture from the Nāgas. The conquered Nāgas became conquerors of the Aryans and even the Asuras.

It is also possible that the Nāgas were tree worshippers. The Mohenjodaro figure of two serpent-like beings coiled round a tree points to that fact. The Nāgas are depicted on the Bharhut gateway as worshippnig the Bodhi tree. The Chaityas, it has been shown, perhaps were originally round buildings erected over the sacred trees. It might be that the Chaityas were originally Naga buildings, though it has been said that they were later on erected by the Aryans around fire-altar. The Buddhists laters on might have accepted these Chaityas as the model for their places of worship (See also last chapter).

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CHAPTER XXVIII

Origin of Stone Architecture in India

Though in the foregoing two chapters we have traced the origin of Indian temples, it has not been mentioned what materials they were made of. The antiquity of wooden and brick architecture has been already indicated. But the origin of stone architecture is a very perplexing question of Indian history.

In the Rigveda, it has already been noticed, stone built houses have been referred to. But many scholars think that those references merely indicated strength of the houses, while others think that stone-built houses or Puras belonged to the Asuras only (Chap. II). Mention of stone buildings in the Epics has similarly been considered as merely imaginary descriptions, and those references are very few in number (chap. V and VI). In the Jatakas, a palace of stone has been referred to in connection with a fairy land. Use of stone for making various articles, including pillars, is, however, indicated by many references in the Jatakas (Ch. VII). Stone was also used in floors and in the walls upto a certain height. All these references indicate that a house made wholly of stone was a scarce thing in India ; and scholars are of opinion that stone houses were first constructed in the time of Asoka.

But against this view should be considered two things. Firstly ; the Cullavagga refers to the fact that the Buddha permitted his disciples to construct houses with walls, floors and even roofs of stone (See Ch. VIII). It is quite likely, therefore, that even at the time of the Buddha, stone houses were not very rare in India. The date of the Cullavagga may be later than the time of the Buddha, but this reference is very likely based on genuine traditions. It shows at least that the Buddhists

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admitted that stone houses were not their creations but existed from before the period of Buddha's life time. The Buddhists built their houses in the models of Prāsādas, Viharas etc. which, as already discussed, existed before the Buddha.

Secondly, the Asokan art is a highly developed one and pre-supposes the existence of Indians' skill in building stone structures. Moreover stone buildings in some form existed at Rajgir from a very early period. The earliest cave temples also indicate some advance in the stone-cutter's art. Stone was also available in various parts of India. Under these circumstances, it is inexplicable why stone was not commonly used in building purposes.

We may thus come to the conclusion that stone buildings existed at least in some parts of India, but were not generally used by the Hindus. It was not due to their ignorance, but due to a prejudice against stone structures, for whatever reasons it might have been (It might be due to the fact that Aryans lived in wooden and brick houses and being strict followers of the Vāstu Vidyâ hesitated to depart from that tradition and moreover because stone structures were made by the non-Aryans—see also p. 224). Stone houses were in early days erected by the Asuras and Nagas—the Asuras of the Rigvedic period, the Nagas and Asuras of Takshasila ("Takshasilā meaning" cutters of stone"), the capital of Nagnajit (Vide J.C. Ghosh's article in Indian Culture, already referred to), and the Asuras and Nagas of Eastern India mentioned in the Satapatha Brahmana and Buddhist traditions. But the Hindus lived in brick and wooden houses ; and when they began image worship, they erected their temples in the style of their own habitations. They called their temples "the home (Ālaya, Āyatana and so on) of the Gods". No technical name was first given to the temples, perhaps because the temples were nothing but the replicas of the residential houses. Then gradually the term Prāsāda, originally perhaps referring to the king's house, and constructed of many storeys with a Vimana (or Sikhara) on

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them, was given to the temple. But they were still made of bricks and wood. The first name of temples in North India was therefore 'Prāsāda' and the same name continued in North India even afterwards, and therefore is variably used in the North Indian Vāstu texts and even Gupta inscriptions. The Prāsadās of brick and wood were being constructed by the Hindus for the abodes of the gods till the 'mandiras' or temples of stone (as the Viśvakarma prakāsa defines it—see ch. XXVI) were introduced. The question therefore arises when stone temples were created in India.

With the coming of Buddhism in North India, the newly made converts departed not only from their religious traditions, but also perhaps from their traditions in architecture. They began to build in stone and justified their action by relating that Buddha had allowed them (Cullavagga : See Chapter VIII) to live not only in Vihāra, Prāsādas and Harmyas (the old Indian type of buildings of bricks and wood) but also in the Guhā and houses made of wood, brick and stone. The Buddhists further began to erect round Stupas, perhaps after the type of the Asura Smasānas of Eastern India mentioned in the Satapatha Brahmana. They copied their Chaityas from the Nagas and the Viharas of ancient India which existed before the rise of the Buddhists, (See Chap. on Arch. in Pali canons.). S. Kramrisch (J. I. SOA XII p. 198) also suspects that the Buddhists adjusted to their mode of worship and monastic life a form of religious architecture already in existence. But the Buddhists, especially lay worshippers could not give up the superstitious belief that houses may bring evil fortune if not made according to the Vāstuvidyâ which had been followed by them since the earliest period (See Ch. on principles of Vāstuvidyâ; Ch. IV and XII). So the Buddhists even in making their Chaityas and Guhās of stone still followed the models of their old houses—of wood and brick. So it is that when the early Chaityas and Viharas were erected of stone or cut into rocks,

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the wooden models were not given up. This explains how the early caves—Chaityas and Viharas, indicating an advanced stone architecture, could still display wooden models. The horse-shoe arch, the basket pattern decorations and all such things indicating wooden origin were thus taken from the wooden houses of those days.

Stone architecture was thus popularised by the Buddhists, under the influence of wooden architecture of the Hindus modified by the technique of the Asura and Naga stone architecture of Eastern and Western India. Asoka, Fahien and Yuan Chwang wrote, employed Yakshas to build his palace, stupas and his gigantic pillars (Legge Fahian p, 77 and Watters Yuan-Chwang p. 91). According to Dr. Nihar Ranjan Ray (Maurya and Sunga Art p. 65) the term 'Asura' has been ascribed to the Mauryas by certain epic and Puranic authors. Was this due to the tyranny of the Mauryas, as Dr. Roy suggests, or were the Mauryas really Asuras (Moriya Samgha might be an Asura organisation) or were in alliance with the Asuras? Those scholars who believe that Chandragupta had secured the Magadhan throne with the help of the Hill tribes of the Punjab and that Chanakya came from the North-west will get support from the fact that the Arthasastra was perhaps related to the Drāviḍa school (See Ch. IX). Chandragupta's conquest of Kabul, Kandahar and Herat and Beluchistan from Seleukos brought the Maurya Empire again in contact with the Asura civilisation of the North-Western India. The difference in style which is noticed between the Asokan art and the oldest known sculptures of Yaksha figures (The Parkham, Patna and Dildarnagar images) may be also explained by assuming that Asoka's relation with the North-Western parts of India led him to employ in erecting his buildings and other structures in stone, the Asuran masons of the North-West who were perhaps more advanced in stone architecture and sculpture than the Asura and Naga masons of Eastern India who created the art noticed in the

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other early stone figures. This may also explain the difference in style noticed between some of the animal figures of Asoka (Rampurwa Bull etc.) and the other figures of his time (Sarnath and Lauriya Lions etc.) The former were executed by one class of masons and the latter by those from the North-West. Thus was created a Buddhist art and architecture in stone under the auspices of the Mauryas, in which old Hindu traditions and Buddhist ideals were harmonised under the Asura and Naga technique. The history of Buddhist stone architecture after the Maurya period is well known.

Though the stone architecture was followed by the Buddhists, the Hindus continued to build their houses, Prāsādas, and Devālayas in brick and wood. It is for this that we have not been able to discover any Hindu temple before the Gupta period. The brick and wooden temples have perished for ever—the Mathura temple of Vāsudeva, the Heliodorus temple of Vasudeva at Besnagar have not preserved for us the main temple structure. They were perhaps made of wood or brick. Hindus had not yet erected their 'Mandiras' of stone.

It has now to be discussed when then stone temples were erected by the Hindus. It may be suggested that it is the Nāgara architecture which first introduced stone temples among the Hindus. I have already discussed that the earliest known writer on Nāgara architecture was Garga, who perhaps wrote his work in about, 110 B. C. or not later than 1st century A. D., perhaps under the inspiration of the Nāga king Sesa. Garga followed the old traditions of the Aryan architecture of the Visvakarmā school but as he was indebted to the Naga architect king, the style of temple architecture in stone that now arose preserved in it the Hindu traditions of Visvakarmā school mixed with Naga technique and was now called the Nāgara architecture. The masons who were now employed in erecting temples were so long working

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in building Buddhist stone structures, and perhaps could not at once give to stone temples all those forms which the Hindu models of temples of wood and brick could supply. They perhaps first erected only flat-roofed stone temples as at Tigawa, Nachna Kuthar and Bhumara. The curvilinear Sikharas came a bit later, though they were formerly created in wood and brick. Thus it is that though Sikhara temples are referred to in literature and Gupta inscriptions, no specimen of those temples of the pre-Gupta period have survived to our times. The flat-roofed stone temples need not be regarded as having originated in the Gupta period but such structures must have been existing from the time of the rise of the Nāgara architecture in the Second century B. C. (at least not later than the 2nd century A. D.) It is perhaps this earliest form of flat-roofed stone temples, the upper part of which was square or rectangular, that led to the idea of the Southern texts that Nāgara temples were square in shape (especially in the upper part).

Even after this origin of the Nāgara stone architecture, the Hindus hesitated to build residential houses in stone. The Viṣṇudharmmottaram says that "Sudhā and Silā should be used in houses of Gods; Sudhā Silā should not be given in Gṛiha (residential house)." It is for this that no specimens of civil architecture in stone of the ancient Hindus have been discovered. Made of bricks and wood Hindu houses have crumbled down without leaving any trace for the posterity. Though stone temples were erected in the pre-Gupta age, even in the Gupta period the Matsya Purana does not mention the use of stone in civil houses (Ch. 254). It says, "The Bhitti (walls) should be of burnt bricks, the thickness of which should be $\frac{1}{16}$ the length of the walls; or they may be made of wood, or there may be earthen walls." A chapter in the Purana is devoted to "collections of wood" (Dāru Āharaṇa) but not 'collection of stone.' But in case of temples it says, "temples may be of brick, wood or stone,

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constructed with arches (Torana)" (Matsya Purana Ch. 269). Even as late as the time of the Mayamatam, a trace of the prejudice continued to exist (Mayamatam XXV. 187½)

Thus it may be concluded that when the Hindus found that stone temples of the Buddhists had not brought any misforture to the owners or the occupiers, they also began to create a stone architecture. Thus it was long before the Guptas that the Naga kings gave rise to the stone (Nāgara) architecture and began to erect stone temples in North India, as their successors in the Deccan, the Pallavas under Mahendra Varman I did the same in the Deccan. In the Deccan too, under the influence of the Hindus, the people were so long using only bricks and wood in building their houses and temples, and were following the old Vāstu Vidyā of the Northern people (see Ch. XXVI.) It must be remembered that the people of the Deccan are more conservative than those of North India (as the caste system even now indicates). So even while North India began to create stone temples, South India gave up the old custom after 800 years. The Buddhists, however, had erected so many cave temples there from the beginning of the Maurya period or later. Pallava king (perhaps related to the Nagas, as Jayaswal believes) Mahendra Varman "caused to be constructed a temple without bricks, without timber, without metals and without mortar." (Mandagapattu inscription). He, therefore, as Dubreuil and others hold, was the first builder of stone temples in the Deccan. This theory is further supported by the fact that the earliest Pallava buildings also contain wooden features : E. G. double brackets supporting the cornice (Longhurst 'Pallava Architecture' pt. I pp. 10 and 11 ; pt. II p. 14)[207]. This style is popularly known as the Dravidian style. Thus was the birth of the new Drāviḍa style out of the Nāgara stone architecture.

(207) The Pallava king thus gave up old Hindu tradition of North India in making temples and built temples after the fashion of South Indian residential houses of the Vimāna type.

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In connection with the wooden structures which might have been imitated by the masons at Mamallapuram, Longhurst (Pallava Architecture. Part II p. 20) says "It is usual to refer to buildings of this kind as Buddhist in style; but there is really no reason why the Brahmins of this period should not have also erected similar wooden buildings in the service of their religion and to have sometimes copied them in stone, as they appear to have done here at Mamallapuram. The fact that no remains of such wooden buildings have been discovered does not prove that they never existed." Here Longhurst too thinks that the Hindus imitated the wooden structures. In the Mamalla period (7th century A. D.) the Buddhist Chaityas had assumed a developed form and shaken off all traces of wooden models. In building the Rathas the Hindus could have imitated these developed stone Chaityas and Viharas or temples erected by the Buddhists, as at Bodh Gaya, Nalanda and Sarnath and not the wooden Buddhist buildings of earlier periods. The fact that wooden models are found in these Rathas will, therefore, go to show that when these Rathas were constructed in stone, the masons were imitating the Hindu (and not Buddhist) wooden structures which were being constructed in the Deccan at that period ; as, when stone construction was started in North India (as shown above) by the Buddhists, they took their models from wooden structures of North India of those days. We shall then have to assume that even in the 7th century A. D., houses or temples in South India were being constructed in the oldest Indian fashion. There is no wonder in it. I have already said (Chapter XXVI) that the people of the Deccan were still following the Vāstu Vidya of the Northern School, retaining their old prejudice against stone buildings and constructing houses and temples in the Northern style (as shown in Ch. XXVI). (Hence the classifications of residential houses in the South Indian texts are similar to that in Northern texts). The wooden

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structures of North India which the Buddhists had first imitated, were still being built in the Deccan. Now when the Southern people shook off their old prejudice against stone buildings, and wanted to create a new temple style, they began to imitate the South Indian wooden buildings. I have already suggested (Ch. XXVI) that the Dravidian temples were constructed after the model of residential houses of South India of the Vimāna type or rather in a mixed form of Northern flat-roofed temples and towered houses of Southern India.

The Dravidian style might have been influenced to a certain extent by the local south Indian styles. It could not have originated from Buddhist Chaityas and wooden houses at the same time. The Ter and Chezarla temples of the 5th century A. D. were built at a time when the first exotic attempt was made by some Southern people to build a temple in stone. But the stone masons of the Deccan of those days were still acquainted with only the style of the Buddhist Chaityas and Viharas, and in making a Hindu temple in stone constructed it with the Buddhist plan and a North Indian Sikhara. This explains why those temples are to some extent imitations of the Buddhist structures with North Indian Sikharas. This style was given up when the Dravidian architecture arose, which resembles more the North Indian Hindu architecture than the Buddhist one (see ch. XXVI). Dravidian architecture was a developed form of the Northern style and the Southern Vāstuvidyā, though allied to Northern Vāstuvidyā, followed henceforth a new course. Thus we may trace the origin of stone architecture and that of the Nāgara and Drāvidian schools of architecture. As the extant Drāviḍa Vāstu works, though based on earlier texts, arose after the 6th century A.D. long after the rise of the Nāgara one in the 2nd century B. C. (a gap of 800 years), the Drāviḍa Vāstu works confused the real meaning of the words 'Nāgara' and 'Drāviḍa' and they

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forgot the characteristics of the Nāgara architecture, only remembering that Nāgara structures were originally square. Hence in the Deccan too, they built 'Nāgara' and 'Drāviḍa' temples and added 'Vesara' ones in later times, not in the original sense, but meaning thereby square temples, hexagonal or octagonal, or round ones respectively.

This review of origin of stone architecture in India will solve many problems of Indian art. The Asokan pillars were executed not after the Persian models or by Persian or Greek architects, but by Indians, the Drāviḍas of the North west. Their difference from the other specimens of early Indian art has also been explained. The Buddhist Chaityas indicated developed stage of stone architecture but they still followed the wooden models. The early Hindus of North India had their Vāstuvidyā, their temples and houses but they have not been discovered, for the specimens of that art were made of brick and wood. The Dravidians of the South, long separated from their kins in the North-west and the East (their western branch being annihilated by Aryans in the Punjab and Sind) had also given up stone architecture when they adopted the culture of the Aryans (Hindus). So their old temples and houses have also perished. When the Hindu stone architecture arose, though the structures simulated partially the Buddhist buildings which were but offsprings of the old generation of Hindu (Aryan, Asura and Naga) art, the style was really a continuation of the style of houses and temples which the Hindus of the North and South India were making so long with wood and brick. The Nāgara architecture was thus a later development of the Visvakarmā school, and the 'Dravidian' architecture that of the Maya school.

As the Nagas had their architecture even before the rise of the Hindu Nāgara style, it may be argued that the Nāgara style might have existed even earlier than the Second century B. C. to which period I have assigned the origin of the Nāgara architecture. The possibility cannot be altogether

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eliminated. But the difficulty in coming to that conclusion is that the name 'Nāgara' is not found in what I call the earliest Vāstu texts (The quotations, the Visvakarma-Prakāsa, Matsyapurana and Bṛihat Samhita). Though these texts, as already mentioned, really described the Nāgara architecture, the name might have been of later origin, and is found in the Hayasirsa, Agni Purana and the Southern texts which I assign to a period later than those mentioned above. Therefore it is that I think that stone architecture or Nāgara architecture arose in the Second century B, C. and was but a developed form of the Viswakarmā school, the old school of the Aryans of North India, modified under Naga influence. The Hayasirsa pancharātram, on which is based the Agni Purana might have been written in the Second century A. D. in which period Dr. Jayaswal places a Naga king named Haya Naga, if he is identified with Hayagrîva the narrator of the Agni Purana chapters and Hayasirsa the author of the former work. In that case scholars might think of the origin of Nagara architecture to have taken place in the Second century A. D., when Hayanaga ruled. This is also another plausible alternative supporting the theory of Jayaswal regarding the origin of Nagara architecture. But we find that the Hayasîrsa describes a later form of Nāgara architecture. Moreover in that case we shall have to assume that while the Buddhists began to erect stone building in the 4th century B. C., the Hindus of North (who, as we have assumed, adopted the custom with the rise of Nagara architecture) took long seven centuries to shake off their prejudice against constructions in stone. This does not appear to be probable. If we assume the rise of Nāgara and stone architecture of the Hindus to have taken place in the Second century B. C., the difficulty is to some extent overcome. Moreover, as I have said, when the available Dravidian works on Vāstu were written in the sixth century A. D., the original meanings of the words Nāgara and Drāviḍa had been confused. It was more probable if the Nāgara architecture

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arose in the Second century B. C. rather than in the Third century A. D. Moreover the Hayasirsa and the Agni Purana, which could not have been written after the 8th century, could confuse the name of its author who was a king with a god of that name ('Bhagawan' used for 'Hayagrîva') if a longer period (2nd century B. C. to 8th century A. D.) is assumed to have lapsed between the composition of these works in 8th century A. D. and the time of Hayagrîva. Hayagrîva may not however, be identical with the Naga king Hayanaga.

The various alternatives suggested above might lead scholars to even suggest that there might not have been any relation at all of the Nāgara art with the rise of stone architecture among the Hindus—the Nāgara art might have arisen in the Second century B.C. or Second century A.D. and the stone temples might have been introduced only in the Gupta period. The reasons for associating the rise of stone architecture with that of Nāgara architecture may be summarised below :—

(1) The old school of North Indian architecture was known as the art of Visvakarmā. About 2nd century A. D. or earlier, we find the same architecture being called the Nāgara architecture. This change may be explained if we only assume that with the rise of Nāgara architecture, some very important change had been introduced in the architecture of North India. But as I have said, Nāgara architecture is based on traditions of the Viswakarmā school. No other change except the introduction of stone temples—really a great departure from the prejudice of the Hindus against stone architecture—can be surmised.

(2) From the time of Garga a series of writers flourished in North India writing about the Nāgara architecture—which also indicates the rise of something new in the architecture of the Hindus about 2nd century B. C.

(3) The Pallavas created the stone architecture in the Deccan. If they were related with the Nagas (as Jayaswal concludes) it is very probable that when those Naga kings

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ruled in North India, they might have attempted the introduction of stone architecture in North India. The Nāgara art is associated with them and hence Nāgara architecture may be connected with stone architecture.

(4) As indicated in the last Chapter (XXVII) it is very probable that Chaityas were at first the religious building of the Nagas. The Buddhists after excavating their cave temples called them Chaityas. Impetus to the Buddhists in building these temples in stone might have been given by the Nagas. It is therefore probable that when the Nāgara art was introduced by the Naga king Sesa (as the Vishnu Purana says) and his disciple Garga, the Nagas might have attempted to introduce also stone in Hindu architecture. Stone architecture might have therefore originated simultaneously with the Nāgara architecture.

(5) Even if the Nāgara architecture arose in 2nd century A. D. (as suggested as an alternative above), we find the Nagas were still ruling in India. They had no prejudice against stone architecture, as the Aryans had. They had often worshipped the Buddha. The Buddhists had already created a stone architecture. The Naga kings in evolving Nāgara architecture had no objection therefore in making stone temples, though they had been Hinduised already.

Against this, however, stands the fact that the earliest known stone temples are flat-roofed and that they belong to the Gupta period. It must be remembered, at the same time that the dates of all the temples which are known as Gupta temples are not definitely known except that of a few. This may be explained by saying that the pre-Gupta stone temples, for reasons unknown to us, have vanished. The roofs of Gupta temples being only flat might be due to the especial liking of the Guptas for this type of structures though other forms of Sikharas must have existed before them.

On the other hand, scholars have assumed that early Gupta temples were all flat-roofed, Sikhara temples began

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only in the later Gupta period and that the Nāgara architecture (with curvilinear Sikharas, which according to them were the most remarkable feature of the Nāgara architecture) began in the later, or after, the Gupta period (8th century) (Saraswati's view above). In that case it remains a puzzle how the South Indian Vāstu texts could make a confusion about the true meaning of the words "Nāgara" and 'Drāviḍa'. We are then to assume either that all the Southern texts are of a very late origin (not earlier than the 10th—which is not probable) or that the Nāgara temples had originated (between 2nd century B. C. and 2nd century A. D.) long before the rise of the Southern texts (which took place, according to me, in or after the Sixth century A. D.). The latter view therefore seems to be more probable. Dr. Jayaswal's theory of the relation of Nāgara architecture with the Nagas is therefore supported (partially) by the study of the Vāstu Sāstras.

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CHAPTER XXIX

Various Phases of Indian Architecture

From the study of the Vāstuvidyā from all points of view and applying it in cases of surviving architectural remains of India we may attempt to trace the development of Indian architecture and also its canons from the earliest time to the sixth century A. D., after which the development is well known to scholars. The different phases indicated below are shown in a table form annexed herewith.

1. Before the coming of the Aryans to India, there were in all parts of India the Asuras, Dānavas, or Drāviḍas and the Nagas who had an architecture of brick as well as perhaps, of stone. Whether the Asuras or Drāviḍas and the Nagas might have possessed their Vāstuvidyā is difficult to infer. The answer is perhaps in the negative, because Vāstuvidyā, as in the Vedic period, was not of a highly developed character. It was related to primitive structures and not to a stone architecture and so it perhaps originated with the Aryans. Nothing can at present be said about the Vāstuvidyā of the Nagas. Haya is known as an early king of the Nagas and it has already been said that architectural chapters in the Agni Purana have been related by a Hayagrîva, and the Hayasirsa pancharātram is also perhaps a work of the same school. But these works, I have assigned to a later period (Ch. XVI) when the Naga and Hindu art had already been amalgamated. A king of the Nagas named Haya has been placed by Jayaswal in the beginning of the 3rd century A. D. and the date is not however incongruous with the style of architecture related in the Agni Purana (see last chapter).

2. With the coming of the Aryans there was going on a mixture of the new comers with the Drāviḍas and the Nagas.

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The Aryans possessed undoubtedly a Vāstuvidyā and a master architect Viswakarmā. The Drāviḍas after adopting Aryan culture evolved a Vāstuvidyā and master architects like Sukra, Nagnajit and Maya. From that time the Drāviḍa architecture and Vāstuvidyā began to flourish side by side with the Aryan Vāstuvidyā and architecture, differing from the latter in details but accepting the main principles of Aryan architecture. Side by side with non-Aryan stone architecture in the North-west, East and South of India, was growing the wooden and brick architecture of the Aryans in the Aryavarta. Thus arose the schools of Viswakarmā and Maya. This state of things existed, we may assume, till the Epic period.

3. The Aryans were then making progress in all parts of India and gradually between the epic period (Ramayana describing undoubtedly the earliest phase of Aryan migration to the south) and 4th century B. C. thoroughly aryanised the Deccan and eastern India. It was now that the Drāviḍa culture and art were highly influenced by those of the Aryans; and in some respects Drāviḍa influence on the Aryans too cannot be ignored. The Aryan gods and non-Aryan gods began to be equally worshipped by the Indians, giving rise to Hinduism, but the influence of Aryan art, religion and the caste system certainly predominated. The Visvakarmā school and the Maya school were flourishing still, but the Deccan accepted even the Visvakarmā school; and brick and wooden architecture began to prevail instead of the stone one. Hindu religion and Hindu art became inseparably connected. The same kinds of temples were erected in the North and the Deccan, some might be creations of the North and some of the South. Residential houses or civil architecture might have progressed in this period on two different lines, though even in this matter there also may be traced some influence of the North on South India. But in the North-western parts of India and Eastern India the Drāviḍa and Naga stone architecture somehow kept up their entity. Traces of the Aryan and Drāviḍa Vāstuvidyā of this

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period have been collected in earlier chapters. Temples (Prāsādas) were erected in this period along with the stupas of the Asuras and the Chaityas of the Nagas. In politics too we find the monarchy of the Aryans (Kshatriyas) flourishing side by side with the republican government of the Drāviḍas (Rājanyas of the Punjab and Eastern India—the Vrātya Kshatriyas).

4. Then came Buddhism with its heterodox principles but not thoroughly at variance with Hinduism. In Eastern India first arose the art of Asoka, a mixture of Visvakarmā school (Aryans) with that of the Drāviḍas and the Nagas. Round Stupas, Chaityas, Prāsadas and Harmmyas were erected, besides the famous structures of Asoka, perhaps created by the Drāviḍa masons of the North-West. Thus the stone architecture of the Buddhists, not altogether free from the Hindu principles, ran side by side with the wooden and brick architecture of the Hindus of the Visvakarmā and the Maya schools. The works of the various writers on Vāstu Vidyā of the Hindus were still current in Society. Temples in brick and wood were still erected by the Hindus.

5. About the 2nd century B. C., the flourishing age of the Buddhist art, the Hindus changed their traditions of building their temples. When the Naga king Sesa and famous astronomer Garga produced the Nāgara architecture, stone temples were no longer a taboo. As stone was introduced, temples of various forms were erected. Hindu architecture of North India entered a new phase of life. The Visvakarmā school thus developed into the Nāgara school.

But in the Deccan, the Maya and the Vis wakarmā schools were still followed. The Hindu temples and houses still continued to be made of brick and wood, but the Buddhists had their cave temples, the Ajanta, Bhaja, Karle, Elura and the like. This was the state of architecture from the 2nd century B. C. to 6th century A. D.

6. In the sixth century A. D. the Deccan had a new life,

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It had shaken off the supremacy of the Guptas; a strong political power arose under the Pallavas. The Pallava king therefore introduced the neo-Drāviḍa style in the Deccan. It was based on the Vāstu Vidyā of the Maya and the Viswakarmā school, but stone temple was no longer forbidden. This style was not to imitate either the Northern style or that of the Buddhists. It was this Drāviḍa style which now produced the 'Dravidian' style of Fergusson, and the old Drāviḍa Vāstu-works had also to be rewritten. The most important feature of these temples was the storeyed Sikhara; in the Vāstu Vidyā too temples therefore had to be re-classified according to the number of storeys they possessed. The Mayamatam, the Kasyapa's works and others had to be re-edited. But it must be noted that civil architecture did not much deviate from the old style, as the names of residential houses indicate.

7-8. After the sixth century A. D. Northern temples too gradually began to acquire various forms due to local influence and genius of the architects. The Nāgara school gave rise to the Lâṭa, Vairāṭa, the Orissan, the Bengal and Kashmira styles. In the Deccan too, the Drāviḍa style gave rise to the Andhra, the Vesara, the so called Chalukyan, the Chola, Hoyasala and Vijayanagara architecture. In the North the Vāstu Vidyā appears to have gradually declined from the Moslem conquest after 11th century; or at least, we have not got many works; but in the Deccan, architecture and Vāstu Vidyā developed more and more under the various Hindu dynasties from the sixth century to the Muhammadan conquest (15th century) and under Vijayanagara. Compilations of even the 15th century are therefore available to us. In North India the stronghold of Hinduism, Rajaputana, however, produced a Mandana Sutradhāra whose works are available.

Architecture and its canons (the Vāstu Vidyā) went side by side with politics. Arthasastra of the Hindus had therefore always been connected with Vāstu Vidyā. The writers

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of some of the works on Vāstu were therefore perhaps authors of the Arthasastra as well. Vṛihaspati, Sukra, Visālāksha and others may be cited as examples. Kings like Nagnajit, Sesa and Haya Naga perhaps were also great architects. The fall of the Vāstu-Vidyā also synchronises with the destruction of the political power of the Hindus. But as construction of houses was also inseparably connected with religion, matters of Vāstu Vidyā remained incorporated in religious works of the Pratishṭhā and Nibandha classes. In South India only it was and is still a living art and the modern study of architectural works also first began in that part of India. But the complete history of Indian architecture—how in it the Aryan, Drāviḍa and Naga elements combined—may only be learnt from the study of both the Northern and the Southern Vāstu Vidyā, more fragmentary in character though the former is than that of the South.

	Phases of art.	Materials.	Phases of Vāstu Vidyâ	How known.	Date.
1.	Asura and Naga Art (?)	Brick and Stone	Unknown	(Mohenjodaro and Harappa architecture)	Pre-Vedic
2.	Aryan Art	Brick and wood	School of Visvakarmā	Chap. II-V of this book	Vedic to Epic period
	Asura Art	Brick and Stone	School of Maya etc.	Do.	
	Naga Art	Brick and Stone (?)	Unknown	...	...
3.	Aryan Art in North India	Brick and wood	(i) School of Visvakarmâ	Known from quotations Ch. IX-X	From Epic to 4th century B. C.
	Drāviḍa Art influenced by Aryan Art	Brick and wood	(ii) Mixed school of Drāviḍa Vāstuvidyā-influenced by Viswakarmā School	Faint traces in Agama, quotations	Do.
4.	Aryan Art limited to Hindus	Brick and wood	As above (no 3 i)	As above	B. C. 4th century to 2nd century B. C.
	Mixed Drāviḍa Art limited to Hindus	Brick and wood	As above (no 3 ii)	As above	B. C. 4th century to 2nd century B.C.
	Buddhist Art (mixture of Aryan, Asura & Naga Art)	Brick, wood & Stone	Followed Hindu & other traditions to certain extent	...	From 4th cen. B. C.

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	Phases of art.	Materials.	Phases of Vāstu Vidyâ.	How known.	Date.
5.	Rise of Neo-Aryan : Nāgara Art in North India	Brick, wood and Stone	Nāgara Vāstuvidyâ of Visvakarmâ	Quotations of Garga and others	2nd cent. B. C. to end of 4th century A. D.
	Mixed Drāviḍa Art of Hindus of Deccan	Brick and wood	As no 3	Faint trace in Agamas & quotations	2nd cent. B. C. to end of 5th century A. D.
	Buddhist Art	Brick and wood & Stone	Development of all traditions	...	Do.
6.	Full-fledged. Nāgara Art	Brick, wood & Stone	Vāstu Texts of North India	Mat. P.; Visva. Pras; Bṛihat Samhita	Gupta period to 6th century A. D.
	Rise of Neo-Drāvida Art The 'Dravidian' style	Brick, wood and Stone	Vāstu texts of Drāviḍas of Deccan	Agamas Mayamatam and Northern texts rewritten	6th cent. A. D. onwards
	Buddhist Art	...	...	...	6th cent. to 12th cent.
7.	Nāgara, Lâṭa, Vairāṭa Schools of North India	Stone	Works of all Schools	Hayasirsa, Agni Purana, Vishnudharma etc.	6th—10th century
	Drāvida and Vesara School in South India	Stone	Extant texts of Drāviḍa School	As no 6	6th—10th century
8.	Nāgara, Lāṭa etc. in North India	...	Extant texts	Samarāngana etc. Mandana Sutradhāra	10th to 15th century
	Drāvida, Vesara, (Chalukya) Andhra, Kalinga etc.	...	Kāsyapa, Mānasara Silparatna, I-S.G. Paddhati etc.	...	10th to 15th century

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APPENDIX G

Original Texts Mentioned in Foot Notes

Numbers indicate those of footnotes.

6. Markandeya Purana Ch. 49—

(a) पर्वतोदधिसेविन्योह्यनिकेतास्तु सर्वशः (V. 15)
तास्तु द्वन्द्वोपघातार्थं चक्रुः पूर्वं पुराणि तु
मरूधन्वषु दुर्गेषु पर्वतेषु दरीषु च
संश्रयन्ति च दुर्गानि वार्त्ता पार्वतमौदकम्
कृत्रिमञ्च तथा दुर्गं (V. 34-36)
गृहाकारा यथा पूर्वं तेषामासन् महीरुहाः
तथा संस्मृत्य तत् सर्वं चक्रुर्वेश्मानि ताः प्रजाः
वृत्तस्यैवं गताः शाखास्तथैवञ्चापरागता
याः शाखाः कल्पवृक्षाणाम् पूर्वमासन् द्विजोत्तम
ता एव शाखा गेहानां शालात्वं तेन तासु तत् (52-54 V.)

(b) कृतेष तेषु स्थानेषु पुन चक्रु गृहानि च
यथा च पूर्वमासन् वै वृत्तास्तु गृहसंस्थिताः
तथा कर्तुम् समारब्धाश्चिन्तयित्वा पुनः पुनः
वृत्ताश्चैव गताः शाखा नताश्चैवापरा गताः
अतः ऊर्ध्वम् गताश्चान्या एनं (?) तिर्यक् गता पराः
वुदध्यान्विष्य तथान्या वा वृत्तशाखा यथा गताः
तथा कृतास्तु तैः शाखास्तस्माच्छालास्तु ताः स्मृताः

(Vayupurana Ch. 8. 124-127)

17. शैलदार्विष्टकादीनां सूत्रग्राहिवशात् तु (यत् ?) यः)।
तक्षणात् स्थुलसूक्ष्माणां तक्षकः स तु कीर्तितः॥

(Mayamatam V. 20)

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18. गृहस्योपरिभूमिर्या हर्म्यं तत् परिकीर्तितम् ।

Sam. Sutradhāra XVIII. 9

19. ध्रुवसज्ञं गृहत्वाद्यं धनधान्यसुखप्रदम् ॥ Vis. Prakāsa II. 103
ध्रुवंधन्यं जयं नन्दं खरं कान्तं मनोरमम् (Samarāngana XXIII. 6)

20. पूश्च पृथ्वी वहुलान् (Rig. II. 24. 189)—पुरीव जूर्ण्यः (Rig. VI. 2.7)
जनेन पुरि । (Rigveda IX. 107. 10)

22. प्रपदं पादुकं विद्याच्छिखा स्तूपीति कथ्यते
लोहकीलकपत्रादि सर्वं दन्तनखादिकम् ॥
सुधा शुक्लं त्विष्टकौघमस्थि मज्जा च पीतरुक् ।
मेदः श्यामरुचिस्तद्वद् रक्तं रक्तरुचिस्तथा ॥
मांसं मेचकवर्णं स्याच्चर्म नीलं न संशयः ।
त्वक् कृष्णवर्णमित्याहु प्रासादे सप्तधातवः ॥

(Silparatnam XVI. 121-23)

28. अबुध्ने राजा वरुणो वनस्योर्ध्वं स्तूपं दधते (Rigveda)

33. भवन्ति शिल्पिनो लोके चतुर्धा स्वस्वकर्मभिः
स्थपतिः सूत्रग्राही च वर्धकिस्तक्षकस्तथा (Mayamatam V. 13-14)

34. तत्राद्यः कथितो मेरुर्मन्दरस्तु द्वितीयकः (Hayasirsapancharātra Ms.

36. वैराजः पुष्पकश्चान्यः कैलासो मणिकस्तथा
त्रिविष्टपश्च पञ्चैव मेरुमूर्द्धनि संस्थिताः (Agnipurana 104. 11.)

37. वृत्तं समुद्गनामा पद्मः पद्माकृतिः शयनाष्टौ

(Brihat Samhita 56. 23)

38. दक्षिणद्वारहिनम् तु वर्द्धमानमुदाहृतम् ।
पूर्वद्वारविहीनं तत् स्वस्तिकं नाम विश्रुतम् ॥ (Mat. Purana 254. 3)

40. मातापित्रोरात्मनश्च पुण्याभिवृद्धये शुभस्थल्यान्देवकुलं कारितन्तत्र

(Khalimpur Inscription)

44. प्रासादप्रतिमारामगृहवाप्यादि सत्कृतिः
कथिता यत्र तच्छिल्पशास्त्रमुक्तम् महर्षिभिः (Sukraniti 4.3.58.)

45. अमर्त्याश्चैव मर्त्याश्च यत्र यत्र वसन्ति हि ।
तद् वस्त्विति मतं तज्ज्ञैस्तद्भेदं च वदाम्यहम् ॥ (Mayamatam II. 1.)

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46. एकाशीत्या पदैर्भक्तं विधेयं नृपमन्दिरम् । (Samarāngana S. XV. 9)

48. महारथ्याप्रमाणेन तदभूमेर्बाह्यतस्ततः ।
व्यासखातान्तरैः सार्धं विधेयं परिखात्रयम् ॥
खातोत्पादोज्झितं कार्यं सत्र्यंशेनार्धतोऽपिवा ।
व्यासतः स्यादशेषेण मूलतस्तदेव तत् ॥
कुर्याद् वप्रं स्वभूभागे परिखोत्खातया मृदा ।
सोत्सङ्गं गजपृष्ठं वा गोत्रीयपदताडितम् ॥
खातोद्वृत्तमृदा वप्रनिर्माणाधिकया ततः ।
भूप्रदेशान् पुरा निम्नानापूर्य समतां नयेत् ॥
एवं संशोध्य परिखात्रितयं परितोऽश्मभिः ।
विधेयमिष्टकाभिर्वा सम्यग्वद्धतलं स्थिरम् ॥
सिरावारिभिरापूर्णं पूर्णं वागामिनाम्भसा ।
विचित्राब्जमनोहारि ससंग्राहाम्बुनिर्गमम् ॥
(Samarāngana S. X. 17-23)

51. कृत्वाभिरामं मुनिवसति स्वर्गसोपानरुपं
कौवेरच्छन्दविम्बं स्फटिकमणिदलाभासगौरं प्रतोलिं ।
(Gupta Inscription No. 10)

52. कुर्याल् प्रतोलीः सर्वेषु महाद्वारेष्वथो दृढाः ।
दृढार्गलाश्चेन्द्रकीलाः कपाटपरिघान्विताः ॥ (Samarāngana X. 38)

64. ऊर्ध्वं न सप्तदशकान्न त्रयोदशकादधः ।
प्राकारोच्छ्रयमिच्छन्ति नापि युग्मकरोन्मितम् ॥
(Samarāngana X. 28)

67. भृगुरत्रिर्वसिष्ठश्च विश्वकर्मा मयस्तथा ।
नारदो नग्नजिच्चैव विशालाक्ष पुरन्दरः ॥
ब्रह्मा कुमारो नन्दीशः शौनको गर्ग एव च ।
वासुदेवोऽनिरुद्धश्च तथा शुक्रबृहस्पती ॥
अष्टादशैते विख्याता वास्तुशास्त्रोपदेशकाः ।
संक्षेपेणोपदिष्टन्तु मनवे मत्सरुपिणा ॥
(Mat. purana 255. 4ff)

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68. गर्गात् पराशरः प्राप्तस्तस्मात्प्राप्तीवृहद्रथः ।
वृहद्रथाद्विश्वकर्मा प्राप्तवान्वास्तुशास्त्रकम् ।
सविश्वकर्मा जगती हितायाकथयत्पुनः ।
वासुदेवादिषु पुनर्भूलीकंभक्तितोब्रवीत् । (Vis. Prakāsa 19.110.)

73. मनसश्चक्षुषोर्यत्र सन्तोषो जायते भुवि ।
तस्यां कार्य्यं गृहं सर्वैरिति गर्गादिसम्मतमिति ।
(Vāsturatnāvali Page 13.)

77. प्रासादलक्षणमिदं कथितं समासाद् गर्गेन यद्विरचितं तदिहास्ति सर्व्वम् ।
मन्वादिभिविरचितानि पृथुनि यानि, तत्संस्मृतिं प्रतिमयात्र कृतोऽधिकारः ॥
(Bṛihat Samhita 56.31.)

121. इदानीं द्राविडान् ब्रूमः प्रासादाञ् शुभलक्षणान् ।
एकभूम्यादयस्ते स्युर्यावद्द्वादशभूमिकाः ॥
(Samarāngana LXI. 1.)

123. भुमिकाङ्गुलमानेन मयस्याष्टोत्तरं शतं ।
सार्द्धहस्तत्रयञ्चैव कथितं विश्वकर्मणा ॥
(Bṛihat Samhita Chap 56. 29.)
नग्नजिता तु चतुर्दश दैर्घेण द्राविड़ं कथितम् । (Do Chap. 58.4.)
नागराणामिमाः संज्ञा लाटादीनामिमास्तथा ।
(Agni purana Chap. 104.22)
नागरानाधिकृत्येह ग्रामेयं वर्त्तनोदिता ।
यो विशेषोऽत्र लाटानां प्रसंक्षेपेणभन्यते ॥
नागरैस्तु समालाटा किन्तु ते कर्मभेदकाः ।
चतुरस्रौ तु तेषां हि मसूरककपोतकौ ।
(Hayasirsa Pancharātra Ch.19.)

140. एकादिसप्तान्ततलानि युक्त्या
शोभादिपञ्चादशगोपुराणि ।
शालासभामण्डपशीर्षकाणि
प्रोक्तानि सब्रन्यमरेश्वराणाम् ॥ (Mayamatam XXIV. 127)

142. द्वारगोपुरकं कुर्यात् पञ्चषट्सप्तभूमिकम् । (Silparatnam 41.5)

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143. एकादिपञ्चभूम्यन्तमल्पानां गोपुराणि हि।
द्विभौमात् षट्तलान्तानि मध्यानां गोपुराण्यपि ॥
द्वितलात् सप्तभौमान्तमुत्तमानां तु गोपुरम्।
(Isana-S-G-Paddhati III. 35.94)

157. त्रयोदशतलादीन्यप्यतः सन्ति गृहाणि हि।
आषोडशतलं प्राह काश्यपो मुनिसत्तमः ॥
(Silparatna 37.110)

165. मण्डपाभा यथा द्वारशोभा तत्र प्रकीर्तिता।
दण्डशाला यथा द्वारशाला द्वारप्रासादं प्रोच्यते बुधैः ॥
मालिकाकृतिवद् द्वारहर्म्यं तु प्रोच्यते बुधैः।
सशालाकृतिसंस्थानं द्वारगोपुरमिष्यते ॥
(Mayamatam)

168.(a) प्रासादं वासुदेवस्य मूर्त्तिभेदं निबोध मे।
धारनाद्धरणीम् विद्धि आकाशं शुषिरात्मकम्।
तेजस्तत् पावकं विद्धि वायुं स्पर्शगतं तथा।
पाषाणादिष्वेव जलं पार्थिवं पृथिवीगुणम् ॥
प्रतिशब्दोद्भवं शब्दं स्पर्शं स्यात् कर्कशादिकम्।
शुक्लादिकं भवेद्रुपं रसमन्नादिदर्शनम् ॥
धूपादिगन्धं गन्धन्तु वाग्भेर्य्यादिषु संस्थिता।
शुकनासाश्रिता नासा बाहू तद्रथकौ स्मृतौ ॥
शिरस्त्वण्डं निगदितं कलसं मूर्द्धजं स्मृतम्।
कण्ठं कण्ठमिति ज्ञेयं स्कन्धं वेदी निगद्यते ॥
पायुपस्थे प्रणाले तु त्वक् सुधा परिकीर्त्तिता।
मुखं द्वारं भवेदस्य प्रतिमा जीव उच्यते ॥
तच्छक्तिं पिण्डिकाम् विद्धि प्रकृतिञ्च तदाकृतिम्।
निश्चलत्वञ्च गर्भोऽस्या अधिष्ठाता तु केशवः।
एवमेष हरिः साक्षात् प्रासादत्वेन संस्थितः।
जङ्घा त्वस्य शिवो ज्ञेयः स्कन्धे धाता व्यवस्थितः।
ऊर्धभागे स्थितो विष्णुरेवं तस्य स्थितस्य हि। (Agnipurana 61. 19-27)

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(a) प्रासादं पुरुषं मत्वा पूजयेन्मन्त्रवित्तमः (See no. 22 above)

(c) प्रासादं यच्छिवशक्त्यात्मकं तच्छक्त्यन्तैः स्याद वसुधाद्यैस्तु तत्त्वैः।
शैवी मूर्त्तिः खलु देवालयारव्येत्यस्माद् ध्येया प्रथमं चाभिपूज्या॥
(I-S-G-Padhati III. 12. 16)

(d) सर्वतत्वमयी यस्मात् प्रासादो भास्करी तनुः।
तद् यथावस्थितं कथयामि निबोधत।
पायूपस्थौ प्रणालौ द्वौ नेत्रो ज्ञेयौ गवाक्षकौ।
सुधा भुग्न (?·····) पिनीज्ञेया स (व) त्तो मञ्जरीकोर्द्धतः॥
जङ्घा जङ्घातु विज्ञेया वरण्डी वसना मता।
शुकाग्रातु भवेन्नासा सूत्राणि विशेषतः॥
गर्भः स्थिरत्वे विज्ञेयो मुखं द्वारं प्रकीर्त्तितं।
कपाटौ ष्टपुपुटौ ज्ञेयौ प्रतिमाजीवमुच्यते॥
स्कन्धस्तु वेदी गदिता कण्ठं कण्ठमिहोच्यते।
शिरोमालास्थितं ज्ञेयं·····चून संस्थितं।
एवमेष रविः साक्षात् प्रासादस्थेन संस्थितः।
जगती पिण्डिका ज्ञेया प्रासादो भास्करस्मृतः।
(Hayasirsa Pancharātra 39-V. R. S. Ms.)

170. (a) अलिन्दानां व्यवच्छेदो नास्ति यत्र समन्ततः।
तद्वास्तु सर्व्वतोभद्रं चतुर्द्वार समायुतम्॥
(Garga Quoted by Bhaṭṭotpala)

(d) प्रदक्षिणां गतैः सर्व्वैः शालाभित्तेरलिन्दकैः
विना परेण द्वारेण नन्द्यावर्त्तमिति स्मृतम्॥
(Garga Quoted by Bhaṭṭotpala)

(c) द्वारालिन्दोऽन्तगस्तेषां ये त्रयो दक्षिणां गताः।
विहाय दक्षिणं द्वारं वर्द्धमानमिति स्मृतम्॥
(Garga Quoted by Bhaṭṭotpala)

(d) प्रासादानान्तु वक्ष्यामि द्वाराणि च यथाक्रमं।
दक्षिणे तुरगै सूत्रे पुरादेर्मुखतः (?) स्थिते।

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तत् प्राच्या पाश्चिम द्वारं प्राङ्मुखं तस्य पश्चिमे ।
अभिचारिक कृत्येषु याम्यद्वारं प्रकल्पयेत् ।
प्रासादे चतुर्द्वारे द्वारान्द (कु) र्यादसङ्करा ।
विदिक्षु नैव कर्त्तव्यं द्वाराणि च तथैव च ।

(e) विस्तारद्विगुणोच्छ्रायं द्वारं कुर्यात् सदैव हि ।
अङ्गुलस्य प्रमाणेन द्वारमान यथोच्यते ।
शतंषष्ठ्याधिकं मानमारभ्येह तथा क्रमात् ।
दशतुन्या तु चत्वारि द्वार (रा) न्युत्तमकानितु ।
त्रीणि मध्यमकानि स्यु स्त्रीण्येवं कन्यसानि तु ।
विस्तारस्तूच्छ्रयोऽर्द्धेन त्रिधारा (वा) उच्छ्रयोधिकः ।
चतुर्भिरङ्गुलेर्व्वापि अष्टभिर्दशभिः शुभः ।
उच्छ्रायपादविस्तीर्णे शाखे द्वे त्वा सुडुम्बरौ ।
वाहुल्य विस्तरार्धेन शाखोडुम्बरयो रिह ।
त्रि-पञ्च-सप्तनवभिः शाखाभिः परिकल्पयेत् ।
द्वारं नत्वैकशाखन्तु कदाचिदपि कल्पयेत् ।
शाखाया स्तूर्यभागेन द्वारपालौ निवेशयेत् ।
दण्डपिङ्गलकौ नित्यं सव्यदक्षिणगोचरौ ।
पत्रभंगे समिथुनैः शारवादूर्ध्वं विभूषयेत् ।
प्रासादमध्यतो द्वारं स्थाप्यं किञ्चित् प्रवेश्य तु ।

(Hayasirsa Pancharātra Ms. Ch. 19)

(f) चतुःषष्टिं कोष्ठकानां मध्ये च तत्र विन्यसेत् ।
द्वारं च मध्यमं श्रेष्ठं समदिक्स्थं प्रशस्यते ॥
विस्तारद्विगुणोत्सेधः कटिरंशे तृतीयके ।
विस्तारार्धेन तद्गर्भो भित्तयोऽन्यास्तथान्तरे ॥
गर्भाच्चतुर्थभागे च द्वारं तद्विगुणोच्छ्रितम् ।
द्वारोच्छ्राय चतुर्भागो विस्तारः शाखयोः स्मृतः ॥
उदुम्बरस्तथैवोक्तः शाखामानेन नित्यशः ।
घनत्वम् पादमानेन शाखयोश्च प्रकीर्त्तितम् ॥
एकशाखा त्रिशाखा वा पञ्च सप्त नवापि वा ।
द्वारिकास्तत्र शस्यन्ते द्वारिभिर्या अकुन्टिकाः ॥

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शाखाचतुर्थ भागेऽत्र प्रतीहारौ तु कारयेत् ।
प्रमथैर्विहगैश्चैव जीवजीवजलोद्भवै. ॥
श्रीवृक्षस्वस्तिकैः पद्मैर्हंसैश्चैव मनोरमैः ।
पत्रान्तरे लताशुभ्रैर्ग्रहैर्वैनायकादिभिः ॥
देवं सपिन्डिकं स्थाप्यं द्वाराष्टं शोभितम् शुभम् ।
(Kasyapa quoted by Bhaṭṭotpala)

179. चतुःषष्टिपदं कार्यं देवतायतनं सदा ॥
द्वारं च मध्यमं तस्य समदिक्स्थं प्रशस्यते ।
द्वारं विस्तरतः कार्यम् भूपाल द्विगुणोच्छ्रयम् ॥
(Vishnudharmmottaram Ch. 88)

189. (a) पूजयित्वा पद्मनिधिं तदधो दक्षवामतः ।
मायाशक्तिं च (?) चिच्छक्तिं गङ्गां च यमुनां तथा ॥
(Merutantra quoted in Purascharyārnava)

(b) द्वारमस्त्रायां वुभि प्रोक्ष्य द्वारपूजां समाचरेत् ।
ऊर्धोदुम्वरके विघ्नम् महालक्ष्मीं सरस्वतीं ॥
तयो दक्षिणशाखायां विघ्नं क्षेत्रे शमं ततः ।
तयोः पार्श्वेगते गंगायमुने पुष्पवारिभिः ॥
देहल्यामर्चयेदस्त्रं प्रतिद्वारमिति क्रमात् ॥ (Sāradātilakam Ch. 4)

191. ईशशिनन्दिकेश्वरसुरपतयो वै महाकालः ।
दिनकरवह्निवृहस्पतिगजवदनयमाश्च भिङ्गिरिटिः
(Mayamatam Ch. 23. Verse. 50)

197. शाखोर्ध न्यस्य रत्नानि न्यसेदूर्धमुडुम्वरम् ।
तस्य मध्ये स्थितादेवी साक्षाल्लक्ष्मीः सुरेश्वरी ॥
कर्त्तव्या दिगगजैः सा तु स्नाप्यमाना घटेनतु ।
शाखोडुम्वरकौ कार्यौ पत्रवल्ल्यादिभूषितौ ॥
एकशाखं त्रिशाखं वा षट्शाखं द्वारमिष्यते ।
नवशाखञ्च कुर्वीत अत उर्धं न कारयेत् ॥
विष्णववताररुपाद्यैः शाखां यत्नाद्विभूषयेत् ।
(Hayasirsa quoted in Haribhakti Vilāsa XX)

TABLE IA

Nāgara Temples

	I {Visvakarma- {Prakāsa	II {Matsya- {Purana	III {Bṛihat {Saṃhita	IV {Bhaviṣya- {Purana	V {Samarāngana {Sutradhāra	
					A	B
1	Meru	Meru	Meru	Meru	Meru	(1) Meru
2	Mandara	Mandara	Mandara	Mandara	Mandara	(2) Mandara
3	Kailāsa	Kailāsa	Kailāsa	Kailāsa	Kailāsa	(3) Kailāsa
4	Vimāna-cchanda	Vimāna-cchanda	Vimāna-cchanda	Vimāna	Vimāna-cchanda	...
5	Nandivar-dhana	Nandivar-dhana	Nandivar-dhana	Nandivar-dhana	Nandivar-dhana	(4) Nandi bhadra
6	Nandana	Nandana	Nandana	Nandana	Nandana	(5) Nandyā-Varta
7	Sarvatobhadra	Sarvatobhadra	Sarvatobhadra	Sarvatobhadra	Sarvatobhadra	(6) Sarvato-bhadra
8	Vṛiṣa	Vṛiṣa	Vṛiṣa	Vṛiṣa	Vṛiṣa	...
9	Simha	Simha	Simha	Simha	Simha	...
10	Gaja	Gaja	Kunjara	Kunjara	Gaja	...
11	Kumbha	Kumbha	Ghaṭa	Ghaṭa	Kumbha	(7) Kumbhaka
12	Samudraka	Samudraka	Samudga	Samudga	Samudra	...
13	Padmaka	Padma	Padma	Padma	Padmaka	...
14	Suparna	Garuḍa	Garuḍa	Garuḍa	Garuḍa	...
15	Hamsa	Hamsa	Hamsa	Hamsa	Hamsa	...

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	{Visvakarma Prakāsa	{Matsya-Purana	{Bṛihat Samhita	{Bhavisya Purana	{Samarāngana Sutradhāra	
16	Vartula	Vartula	Vṛitta	Vṛitta	Vartula	...
17	Chaturasra	Chaturasra	Chatushkona	Chatushkona	Chaturasra	...
18	Ashtāsra	Ashṭāsra	Ashṭāsra	Ashṭāsra	Ashṭāsra	...
19	Soḍasāsra	Soḍasāsra	Soḍasāsra	Soḍasāsra	Soḍasāsra	...
20	Mṛigarāja or Gṛiharāja or Balabhi-cchanda	Mṛiga or Balabhi-cchanda	...	...	Mṛigarāja or Balabhi-cchanda	... (8) Gṛiharāja ...
20B	Śrivṛksha	Śrivṛiksha	...	...	Śrivṛiksha	... (9) Srikuṭa (10) Srimukha (11) Sridhara (12) Vadara (13) Priyadarsana (14) Kulanandana (15) Antariksha (16) Pushpābhāsa (17) Visālaka (18) Samkirṇa

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Visvakarma Prakāsa	Matsya-Purana	Bṛihat Saṁhita	Bhavisya Purana	Samarāngana Sutradhāra

B

(19) Mahā-nanda
(20) Saubhāgya
(21) Vibhanga
(22) Vibhava
(23) Vibhatsa
(24) Sri-Tunga
(25) Mānatunga
(26) Vāhyodara
(27) Niryuho-dara
(28) Samodara
(29) Bhadra-kosa
(30) Chitrakuṭa
(31) Vimala
(32) Harshana
(33) Bhadra Samkirna
(34) Bhadra-visāla
(35) Bhadra-vishkambha
(36) Ujjayanta

N. B. Though the first four works do not definitely call these temples as Nāgara, that they are so is quite evident from work no V (A). Temples under V (B) are later ones.

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TABLE IB

Later Nāgara & Lāta Temples

	I	II	III	IV
	Hayasirsa-Pancharātra	Agni Purana	Garuḍa Purana	Samarāngana Sutradhāra (Also see T. IA)
		A		
		Vairāja Group (Square)		
1	Meru	Meru	Meru	...
2	Mandara	Mandara	Mandara	...
3	Vimāna	Vimāna	Vimāna	Vimāna
4	Nandivar-dhana	Nandivar-dhana	Nandivar-dhana	Nandivar-dhana
5	Nandana	Nandana	Nandana	Nandyāvarta
6	Sarvato-bhadra	Sarvatobhadra	Sarvatobhadra	Sarvatobhadra
7	Bhadra	Bhadra	Bhadra	Bhadra
8	Ruchaka	Ruchaka	Ruchaka	Ruchaka
9	Srivatsa	Srivatsa	Srivatsa	...
10	...	...	...	Simhapanjara
11	...	...	...	Hasti
12	...	...	...	Gajayuthapa
13	...	...	...	Sritaru
14	...	...	...	Srikuṭa
15	...	...	...	Muktakona
16	...	...	...	Ushnisha
17	...	...	...	Sālā
18	...	...	...	Avatamsa
19	...	...	...	Svastika
20	...	...	...	Kshitibhushana
21	...	...	...	Bhujaya
22	...	...	...	Vijaya
23	...	...	...	Pramadāpriya
24	...	...	...	Vyāmisra
25	...	...	...	Kuvera
26	...	...	...	Vasudhādhara
27	...	...	...	Chitrakuṭa

N. B. The Samarāngana-Sutradhāra mentions 24 names, 6 only common to the other works. Nos. 1 to 6, 10, 11, 12 may be compared to Nos. 1, 5, 7, 9, 10 in Table IA. No. 14 is similar to no. (9) of Table IA, VB.

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	I	II	III	IV
		B. Pushpaka Group (Rectangular)		
1	Valabhi	Valabhi	Valabhi	...
2	Gṛiharāja	Gṛiharāja	Gṛiharāja	Gṛiharāja
3	Mandira	Mandira	Mandira	...
4	Brahmma-mandira	Brahmma-mandira	Brahmma-mandira	...
5	Bhuvana	Bhuvana	Bhuvana	...
6	Prabhava	Prabhava	Prabhava	Prabhava
7	Sivikā	Sivikā	Sivikā	Sivikā
8	Sālā	Sālā	Sālā Gṛiha	Dvi-Sāla
9	Visāla	Visāla	Visāla	Visāla
10	...	...	...	Amala
11	...	...	...	Bibhu
12	...	...	...	Bhava
13	...	...	...	Mukhasāla
14	...	...	...	Saumukhya

N. B. Nos. 1 & 2 may be compared to those in T. IA.

C. Kailāsa Group. (Circular)

1	Valaya	Valaya	Valaya	Valaya
2	Dundubhi	Dundubhi	Dundubhi	Dundubhi
3	Padma	Padma	Padma	Padma
4	Mahāpadma	Mahāpadma	Mahāpadma	...
5	Mukuli	Vardhani	Mukuli	...
6	Ushnisha	Ushnisha	Ushnishi	...
7	Samkha	Samkha	Samkha	...
8	Kalasa	Kalasa	Kalasa	...
9	Srivṛiksha	Kha (Sri)—Vṛiksha	Guvāvṛiksha	...
10	...	...	...	Kurma
11	...	...	...	Prānta
12	...	...	...	Kānta
13	...	...	...	Chaturmukha
14	...	...	...	Ulupika
15	...	...	...	Manduka
16	...	...	...	Tāligṛiha

[N. B. Nos. 1, 3 & 8 may be compared to T. IA.]

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D. Manika Group (Oval)

	I	II	III	IV
1	Gaja	Gaja	Gaja	...
2	Vṛisha	Vṛishabha	Vṛisha	...
3	Hamsa	Hamsa	Hamsa	...
4	Garuḍa	Garuḍa	Garuḍa	...
5	Ṛiksha	Ṛikshanāyaka	Ṛikshanāyaka	...
6	Bhusana	Bhushana	Bhumukha	...
7	Bhudhara	Bhudhara	Bhudhara	...
8	Srijaya	Srijaya	Srijaya	...
9	Pṛithivi-dhara	Pṛithividhara	Pṛithividhara	...
10	...	...	...	Āmoda
11	...	...	...	Raitika
12	...	...	...	Tunga
13	...	...	...	Chāru
14	...	...	...	Bhuti
15	...	...	...	Nishevaka
16	...	...	...	Nishedha
17	...	...	...	Simha
18	...	...	...	Suprabha
19	...	...	...	Lochanotsava

[N. B. Nos. 1, 2, 3, 4, 17 may be compared to T. IA.]

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E. Trivishṭapa Group (Octagonal)

1	Vajra	Vajra	Vajra	Vajra
2	Chakra	Chakra	Chakra	...
3	Svastika	Svastika	Mushṭika	...
4	Vajra-svastika	Vajrasvastika	Vakra	...
5	Chakra-Svastika	Chakra-Svastika	Chakra-Svastika	...
6	Khaḍga	Khaḍga	Khaḍga	...
7	Gadā	Gadā	Gadā	...
8	Srikanṭha	Srikanṭha	Srivṛiksha (?)	...
9	Vijaya	Vijaya	Vijaya	...
10	...	...	...	Nandana
11	...	...	...	Samku
12	...	...	...	Mekhala
13	...	...	...	Vāmana
14	...	...	...	Laya
15	...	...	...	Mahāpadma
16	...	...	...	Hamsa
17	...	...	...	Vyoma
18	...	...	...	Chandrodaya

N.B. The Samarāngana contains 64 names of which very few (15) are similar to those in other works. This list is therefore perhaps of the Lāṭa temples and not Nāgara ones.

TABLE IC

Early Drāvida Temples

	I Suprabheda-gama	II Isanasiva-Gurudeva-Paddhati	III Silparatna (A)	IV & V I-S-G- Paddhati (B) Silparatna (B)	VI Vaikhana-sagama	VII Sukraniti	VIII Atri Samhita	Remarks—Comparison with Nagara temples
1	Meru	Meru	Meru			Meru		(See Table IA & B
						Mandara		Do.
2	Mandara	Mandara	Mandara					Table I
3	Kailasa	Kailasa	Kailasa				Nandyavarta	Table IA (6)
4	Nandyavarta				Nandya			
					Varta		Nalinaka	
5	Nalina			Nalina	Nalina		Pranalinaka	
6	Pralina			Parlina			Parvatakriti	
7	Parvata			Parvatakriti	Parvata-kara			Cf. T. IF
8	Himavan					Srikara		
9	Srikara	Srikara	Srikara				Srivatsa	
10	Mahendra	Mahendra	Mahendra					
11	Sri Varta (?)							
12	Nila	Nila	Nila				Vrishabhakara	T. IA (8)
13	Nishadha	Nishadha	Nishadha				Kumbhakara	T. IA (71)
14		Vrishacchanda	Vrishacchanda				Padmakara	T. IA (13)
15		Kumbha	Kumbha		Padmakara	Padmakuta	Garudakara	T. IA (14)
16		Padmakanta	Padmakanta					T. IA (15)
17		Garudacchanda	Garudacchanda					
18		Hamsacchanda	Hamsacchanda					T. IA (3)
19		Merukuta	Merukuta					
20		Kailasa Kanta	Kailasa Kanta	Kailasacchanda				
21		Jayanga	Jayanga		Vimalakriti			
22		Vimala	Vimala					
23		Padmabhadra	Padmabhadra					
24		Rudrakanta	Rudrakanta	Rudracchanda				
25		Skandakanta	...					
26		Yogabhadra	Yogabhadra					
27		Mangala	Mangala					
28		Vindhyacchanda	Vindhyacchanda					
29		Vimalanga	Vimalanga					
30		Bhogicchanda	Bhogicchanda					
31		Saumukhya	Saumukhya					

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	I	II	III	IV & V	VI	VII	VIII	Remarks
32		Srimandana	Srimandana					
33		Lalitakanta	Lalitakanta	Lalitabhadra				
34		Srivisala	Srivisala				Nandivisala	
35		Vijaya	Vijaya			Vijaya		
36		Sudarsana	Sudarsana					
37		Jayamangala	Jayamangala					
38		Chitrakuta	Chitrakuta		Silpa		Chitra Silpa	
39			Bhadrasikha					
40				Sarvatobhadra	Sarvato-bhadrra		Sarvatobhadra	T. IA (7)
41				Chaturmukha	Chatur-mukha		Chaturmukha	(cf. T. IB)
42				Visnucchanda				
43				Hastiprishtha			Hastipristha	
44				Sivabhadra				
45				Sivacchanda				
46				Vrittabhadra	Vritta-bhadra		Vritta-Saubhadra	
47				Ashtanga			Ashtanga	
48				Sri Pratishthita	Sri Pratish thita		Sri Pratishthita	
49				Srikanta				
50				Sricchanda				
51				Saubhadra				
52				Svastika	Svastika	Svastika	Svastika	
53				Samujjal a				
54							Srimatsvastika	
55				IV (B)			Panjaramukha	
56				I-S-G-D.P. (c)			Utpalaphullaka	
57					Bhadra		Bhadra	
58							Supaushtika	
59				Vritta	Vritta		Vritta	Table IA (16)
60							Sasivritta	
61							Somavritta	
62							Gandhara	
63							Gandhara-panchaka	
64							Somacchanda	
65							Sriyavritta	
66				Visalaka			Visala	T. IB (G. B)
67							Brahma Vritta	
68				Chatusphuta	Chutusphuta		Chatusputa	
69							Anganakara	

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	I	II	III	IV (B)	VI	VII	VIII	Remarks
							Somardha	
70					Maha-padma	Maha-padma	Mahapadma	
71				Utpalapatraka	Udyoga-padma		Urjalapatraka	
72							Bahupatra	
73							Ghona	
74							Cchandavritta	
75					Vedika		Vedika	
76							Siddhayoga	
77							Kutakara	
78							Vilokana	
79							Tilaka	
80							Valenduka	
81							Mastaka Sandhika	
82				Kudya Vritta			Kodya Vritta	
83							Bhutavaihara	
84				Yogakanta	Yogakanta			
85					Geha			
86					Disasvastika			
87					Khanda-Harmya			
88				Prekshagriha	Preksha-Griha			
89				Maharajahvaya	Maharaja-cchanda			
90					Sanairyoga			
91					A (?) tra-khanda			
92				Ganikavisala	Ganika-visala			
93					(These 26 only named out of 96 temples)	Ratnasirsa		
94						Dhatumana		
95						Padmakosa		
96						Pushpa-hamsa		
97						Malyavan		T. IF
98						Pariyatra		T. IF
99						Rkshamali		
100								

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	I	II	III	IV (B)	VI	VII	VIII	Remarks
101						Dyuman Chandra-sekhara		
102								
103				Nagahvaya				
104				Bhagacchanda				
105				Trikutaka			Trikuta	
106				Sri-vardhana				
107				Padmagriha				
108				Atyantakanta			Several	
109				Bhanukanta			others not	
110				Chandrakanta			similar to	
111				Kratuvardhana			any others	
112				Mantraputa				
113				Avantya			Total 96.	
114				Mahisa				
115				Tantrikanta				
116				Karnabhadra				
117				Vijayanga				
118				Visalabhadra				
119				Karnasalaka				
120				Padmasana				
121				Indrakanta				
122				Sarvalalita				
123				Pratyantakanta				
124				Malagriha				
125				Prithivivijaya				
126				Nandivisala				
127				Sarvanga-Sundara				Cf. Orissa Temples.
128				Chaya Griha				
129				Rativardhana				
130				Visalalaya				
131				Catushpadika				
132				Turangavadana				
133				Ganika pindika				
134				Syenacchanda				
135				Utpalagra				
136				Kukkutapucchaka				
137				Mundaprasadaka				

N. B. The comparison of this table will show that the classification found in II and III was the earliest one. This was followed by those in I, IV, V and VI (Nalinadi Group). The latest classification in this Group is that found in IV B (I-S-G-Paddhati C) and no. VIII.

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TABLE ID

Later Drāvida Temples

I	II	III	IV
Silparatna (c)	Mayamatam	Kasyapa	Manasara
	I Storeyed		
1 Sribhoga (and others not named)	Sribhoga	Sribhoga	Bhoga
2 ...	Srivisāla Cf T. IC	Sri Visāla	Sri-visāla
3 ...	Vaijayanta	...	Vaijayanta
4 ...	Svastivandha	Svastivandha	Svastivandha
5 ...	Srikara Cf. T. IC	Srikara	Srikara
6 ...	Hasṭi-prishtha Cf. T. IC	...	Hasti-prishṭha
7 ...	Skanda Kānta	...	Skandakānta
8 ...	...	Sribhadra	...
9 ...	...	Vrittakesara	Kesara
10 ...	...	Kalyāna-Sundara	
	II Storeyed		
1 Svastika etc.	Svastika (Cf. T. IC)	Svastika	Svastika
2 ...	Svasti Vandha	Svasti Vandha	...
3 ...	Kailāsa (Cf. T. IC)	Kailāsa	...
4 ...	Parvata (Cf. T. IC)	... ...	... ...
5 ...	Kalyāna	Kalyāna-Sundara	...

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	I	II	III	IV
6	...	Paushṭika	...	Paushṭika
7	...	Pānchāla	Pānchāla	...
8	...	Vishnu Kānta	Vishnu Kānta	...
9	...	Sumangala	Mangala (Cf. T. IC)	...
10	...	...	Svastikabhadra	...
11	...	...	Srikara	Srikara
12	...	Gāndhāra (Cf. T. IC)	Gāndhāra	...
13	...	Hastiprishṭha	...	...
14	...	Manohara	Manohara	...
15	...	Isvarakānta	...	...
16	...	Kuverakānta	Kuverakānta	...
17	...	Vṛitta Harmyaka	...	...
18	...	...	Visvakānta	...
19	...	...	Sivakānta	...
20	...	...	Rudrakānta	...
21	...	...	...	Vijaya
22	...	...	...	Siddha
23	...	...	...	Antika
24	...	...	...	Adbhuta
25	...	...	...	Pushkala

III Storeyed

1	Svastika etc.	Svastika	Svastika	...
2	...	Vimalākṛitika (Cf. T. IC)	...	...
3	...	Vimāna	Vimāna	...
4	...	Vṛitta (Cf T. IC)	...	...
5	...	Khandya Harmya (Cf. T. IC)	...	...

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	I	II	III	IV
6	...	Nimnaka	...	...
7	...	Harmya	...	...
8	...	Hastiprihsṭha	Hastiprishṭha	...
9	...	Stambhatorana	...	...
10	...	Gajaprishṭha	...	...
11	...	Bhadrakosṭha	Bhadrakosṭha	...
12	...	Vṛittakuṭa	Vṛittakuṭa	...
13	...	Sumangala	Sumangala	...
14	...	Gāndhāra	Gāndhāra	...
15	...	Sribhoga	Sribhogādhy	...
16	...	...	Svastibhadra	...
17	...	...	Brahmakānta	Brahmakānta
18	...	...	Vishnukānta	...
19	...	...	Sivakānta	...
20	...	...	Rudrakānta	...
21	...	...	Suddha	...
22	...	...	Srikanṭha	Srikānta
23	...	...	Srivisāla	...
24	...	...	...	Āsana
25	...	...	...	Sukhālaya
26	...	...	...	Kesava
27	...	...	...	Kamalānga
28	...	...	...	Merukānta
29	...	...	...	Kailāsa

IV Storeyed

1	Samudra etc.	Samudraka	Subhadra (?)	...
2	...	Srivisāla	Srivisāla	...
3	...	Jayāvaha	Jayāvaha	...
4	...	Kapotapanjara	...	...
5	...	Bhadrakuṭa	...	...
6	...	Manohara	...	..
7	...	Avantika	...	...
8	...	Sukhāvaha	...	...

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	I	II	III	IV
9	...	...	Srikānta	...
10	...	...	Srimandana	...
11	...	...	Sribhavanta	...
12	...	...	Sarvadālaya	...
13	...	...	Vāhya	...
14	...	...	...	Vishnukānta
15	...	...	...	Caturmukha
16	...	...	...	Sadāsiva
17	...	...	...	Rudrakānta
18	...	...	...	Isvarakānta
19	...	...	...	Manchakānta
20	...	...	...	Vedikānta
21	...	...	...	Indrakānta
		V Storeyed		
1	Brahma-kānta etc.	(no names)	Brahmakānta	Brahmakānta
2	...	...	Prājāpatya	...
3	...	...	Svayambhuva	...
4	...	...	Bhadrakuṭa	...
5	...	...	Janārdana	...
6	...	...	Atibhadra	...
7	...	...	Sarvatobhadra (Cf. T. IC)	...
8	...	...	Virabhadra	...
9	...	...	...	Airāvata
10	...	...	...	Bhutakānta
11	...	...	...	Visvakānta
12	...	...	...	Murtikānta
13	...	...	...	Yamakānta
14	...	...	...	Gṛihakānta
15	...	...	...	Yajna-Kānta
		VI Storeyed		
1	Ambujāsana etc.	...	Ambujāsana	...

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	I	II	III	IV
2	...	...	Susamkara	...
3	...	...	Bhadra (Cf. T. IC)	...
4	...	...	Sivabhadra	...
5	...	...	Nagendra	
6	...	...	...	Padmakānta
7	...	...	...	Kāntāra
8	...	...	...	Sundara
9	...	...	...	Upakānta
10	...	...	...	Kamala
11	...	...	...	Ratnakānta
12	...	...	...	Vipulānga
13	...	...	...	Jyotishkānta
14	...	...	...	Saroruha
15	...	...	...	Vipulākṛitika
16	...	...	...	Svastikānta
17	...	...	...	Nandyāvarta (Cf. T. IC)
18	...	...	...	Ikshukānta

VII Storeyed

1	Sricchanda etc.	...	Sricchanda	...
2	...	...	Samujjala	...
3	...	...	Srivisāla	...
4	...	...	Srikānta	Srikānta
5	...	...	Sripriya	Sribhoga
6	...	...	Rudrakānta	...
7	...	...	Vṛittabhadra	...
8	...	...	Suvṛitta	...
9	...	...	Sivabhadra	...
10	...	...	Sivasaukhya	...
11	...	...	...	Pundarika
12	...	...	...	Dharana
13	...	...	...	Panjara

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	I	II	III	IV
14	...	...	...	Āsramāgāra
15	...	...	...	Harmyakānta
16	...	...	...	Himakānta

VIII Storeyed

1	Sivacchanda etc.	...	Sivacchanda	...
2	...	...	Vāgîsa	...
3	...	...	Parvata	...
4	...	...	Kailāsa	...
5	...	...	...	Bhukānta
6	...	...	...	Bhupakānta
7	...	...	...	Svargakānta
8	...	...	...	Mahākānta
9	...	...	...	Janakānta
10	...	...	...	Tapaskānta
11	...	...	...	Salyakānta
12	...	...	...	Devakānta

IX Storeyed

1	Vijaya etc.	...	Dharātala	...
2	...	...	Lalitabhadra	...
3	...	...	Brahmakānta	...
4	...	...	Pradesa	...
5	...	...	Srivardhana	...
6	...	...	Supadma	...
7	...	...	Krita-Vardhana	...
8	...	...	...	Saurakānta
9	...	...	...	Raurava
10	...	...	...	Chandita
11	...	...	...	Bhuṣana
12	...	...	...	Vivrata
13	...	...	...	Supratikānta
14	...	...	...	Visva-Kānta

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X Storeyed

	I	II	III	IV
1	(no names)	(no names)	Narakānta	...
2	...	...	Atyantakānta	...
3	...	...	Mantrahputa	...
4	...	...	Kānta	...
5	...	...	Isvarakānta	...
6	...	...	...	Bhukānta
7	...	...	...	Chandrakānta
8	...	...	...	Bhavanakānta
9	...	...	...	Antarikshakānta
10	...	...	...	Meghakānta
11	...	...	...	Abjakānta

XI Storeyed

1	(No names)	(No names)	Brahmakānta	...
2	...	...	Vijaya	...
3	...	...	Sārvārhaka	...
4	...	...	Indrakānta	...
5	...	...	Ganikāsālaka	...
6	...	...	Indrakānta	...
7	...	...	Karma Visāla	...
8	...	...	...	Chandrakānta
9	...	...	...	Sambhukānta
10	...	...	...	Isakānta
11	...	...	...	Yamakānta
12	...	...	...	Vajrakānta
13	...	...	...	Arkakānta

XII Storeyed

1	(no names)	(No names)	(No names)	Pānchāla
2	...	...	...	Drāviḍa
3	...	...	...	Madhyakānta
4	...	...	...	Kalingakānta
5	...	...	...	Virāṭakānta
6	...	...	...	Kerala

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	I	II	III	IV
7	...	...	...	Vamsakānta
8	...	...	...	Magadhakānta
9	...	...	...	Janakakānta
10	...	...	...	Gurjarakānta

N. B. XIII to XVI storeyed temples are not mentioned in any work except in no. III which also does not contain the names of XII to XV storeyed temples.

XVI Storeyed

1	...	...	Brahmakānta	...
2	...	...	Sāraswata	...
3	...	...	Pradesa	...
4	...	...	Srikara	...
5	...	...	Pārvatika	...
6	...	...	Susambhava	...

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TABLE IE

Vairāti and Orissan Temples

Vairāṭi	Orissan
1 Digbhadra	1 Mahāmeru
2 Srivatsa	2 Meru—See T. IA
3 Vardhamāna	3 Mandara—See T. IA
4 Nandyāvarta	4 Kailāsa—See T. IA
5 Nandivardhana	5 Dibidāna
6 Vimāna	6 Kesari
7 Padma	7 Srivatsa—See T. IB
8 Mahābhadra	8 Nandivardhana—See T. IA
9 Srivardhamāna	9 Chitrakuṭa
10 Mahāpadma	10 Suvarnakuṭa
11 Panchasāla	11 Padmasila (?)
12 Prithivijaya	12 Kritidushana
	13 Ratnasundara
	14 Bihasta-Indra
	15 Kshetrabhuṣana
	16 Sarbāngasundara—cf. sam. S. 59
	17 Sritaru—See T. IB
	18 Nichasā
	19 Mulasri
	20 Hangsa—T. IA
	21 Dribidana
	22 Garuḍa
	23 Laghu Vimāna
	24 Aṣṭāsri
	25 Padmākāra T. IA
	26 Kalpataru
	27 Ratnasāra
	28 Laghuseka
	29 Mādhabi
	30 Nāgari
	31 Kosali
	32 Birāṭi
	33 Basanta

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34 Surālaya
35 Ashṭāsri (?) (cf. T. IA)
36 Bahantisāra
37 Barabhi (cf. T. IA)
38 Biharāsara
39 Biswakarmā
40 Drabibana
41 Indra
42 Nisada
43 Duipadma
44 Kanihastha
45 Laghumandara
46 Mahādrāviḍa
47 Mulasrivatsa
48 Purnasāla
49 Subarnakuṭa
50 Tripāti
51 Bṛishabha—T. IA
52 Khandasāla
53 Madhya
54 Mahābaḍabhi
55 Nanda Sreebatsa
56 Srivatsa Khandasāla
57 Bahargamasāra

II Bhadra Group

58 Bhadra—T. IB
59 Mahābhadra
60 Bijayabhadra
61 Nalinibhadra
62 Medini Vijaya
63 Kesari
64 Kesara

III Khakhara Group

65 Draviḍā
66 Barabhi
67 Kosoli

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TABLE IF

Temples in Visnudharmmottāram

1 Himavān—cf. Suprabheda—Samarangana
2 Mālyavān—cf. Sukraniti
3 Śṛingavān
4 Āgāra
5 Bhavana
6 Gṛiha
7 Nishadha—cf. Suprabheda
8 Nila—cf. Suprabheda
9 Cheta
10 Vindhya
11 Balabhi—cf. Mat. P. etc.
12 Vriddhida
13 Triguna
14 Balabhi (?)
15 Sikhara
16 Turaga
17 Kunjara—Cf. Mat. P.
18 Yatheshṭa
19 Visāla—cf. Haysirsa
20 Bhadra—cf. Hayasirsa
21 Dwārapāla
22 Samudra—cf. Mat. P. etc.
23 Sveta
24 Gandhamādana—cf. Samara. Sutra Vimānādi 64 (ch. 59)
25 Saumya (?)
26 Subhadra
27 Kamala—cf. Mat. P.
28 Arunodaya
29 Guha—cf. Brihat Sam.
30 Garuḍa—Cf. Mat. P.

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31 Sarva
32 Trailokya
33 Linga
34 Sarvakiṭa
35 Brahmmānda
36 Sāra—cf. Kāmikāgama
37 Chaturasa—cf. Mat. P. etc.
38 Sumekhala
39 Vimekhala
40 Trimekhala
41 Dhishnya
42 Salya
43 Budha
44 Indu
45 Griha (?)
46 Bahubhumika
47 Meru—cf. Mat. P.
48 Suktimān
49 Mandara—cf. Mat. P.
50 Pāriyātra—cf. Sukraniti
51 Alaka
52 Vimāna—cf. Mat, P.
53 Shaḍbhauma
54 Panchata (ka)
55 Chatushkaka (?)
56 Tribhumi
57 Dvibhuma
58 Ekabhauma
59 Vṛitta (Samudra ?)—cf. Mat. P.
60 Nandi—cf. Mat. P.
61 Guharāja—cf. Mat. P.
62 Vṛisha—cf. Mat. P.
63 Hamsa—cf. Mat. P.
64 Ghaṭa—cf. Mat. P.
65 Simha—cf. Mat. P.

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66 Mandapa
67 Dvādasāsri
68 Saḍasri
69 Ashṭāsri—cf. Mat. P.
70 Kailāsa—cf. Mat. P.
71 Trikuṭa—cf. S. Sutra. 56.64
72 Saumya
73 Rājarāja
74 Dharanidhara—cf. Sam. Sut. 56. 58
75 Vimāna (?)
76 Surarāṭ
77 Ānanda
78 Susama
79 Prabhanjana
80 Viswakarmā—cf. Orissan temples (no. 39)
81 Mahāsumana
82 Cchatra
83 Mṛidanga
84 Vajra—cf. Hayasirsa
85 Lokapāla
86 Digvandha
87 Sāmānya
88 Suguha
89 Triguna
90 Nandaka—cf. Mat. P.
91 Ākāsani
92 Shoḍasāsra
93 Samkha—cf. Hayasirsa
94 Vaijayanta
95 Ambada
96 Mangala—cf. Isana-S-G-P.
97 Sarvatobhadra—cf. Mat. P.
3 more not described

Total 100

N. B. [Almost all the 20 Nāgara temples are mentioned here. There are in addition several names similar to those of South Indian temples. I therefore think the list to be mainly that of Nāgara temples of a later period.]

TABLE II

Mandapas

Manasara	Mayamatam	Silparatnam	Isanasiva Gurudeva	Suprabheda	Dipta Tantra	Visvakarma	Matsya Puran	Samarangana
		Brahmmasana			Parvata	Pushpaka	Pushpaka	Pushpaka
Himaja		Srikara			Srikara	Pushpabhadra	Pushpabhadra	Pushpabhadra
Nishadaja		Sabharanga				Suvritta	Subrata	Suprabha
Vijaya		Indukanta			Kailasa	Amrita-nandana	Amrita-nandana	Amrita-nandana
Malayaja								
		Vishnukanta			Kesara	Kausalya	Kausala	Kausalya
Parijatra		Lalitabhadra			Sribhoga	Buddhi-Samkirna	Buddhi-Samkira	Buddhi-Samkirna
Gandha-madana						Gajabhadra	Gajabhadra	Gajabhadra
Hemakuta		Sri Pratish-thita	Sri Pratish-thita	Sri Pratish-thita				
		Nandyavarta	Nandyavarta	Nandyavarta	Srikuta	Jayavaha	Jayavaha	Jayavaha
Dandaka		Svastika	Svastika		Srikantha	Srivatsa	Srivatsa	Srivatsa
Svastika		Virasina	Virasina	Virasina		Vastu Kirna	Vastu Kirtti	Vastu Kirna
Chaturmukha		Manibhadra	Manibhadra	Manibhadra		Manibhadra	Manibhadra	Manibhadra
Sarvatobhadra	Sarvatobhadra	Visalaka	Visalaka		Srivisala	Visala	Visala	Visala
Maulika		Visala		Visala		Srugundhara	Srutinjaya	Srutinjaya
Meruja	Meruka	Vijaya	Vijaya		Vijaya	Vijaya	Vijaya	Vijaya
Vijaya	Vijaya					Suslishta	Suslishta	Suslishta
Padmaka	Padmaka					Satrumardana	Satrumardana	Satrumardana
Sicha (?)	Siddha				Pushkala	Bhagyapancha	Bhagapancha	Bhagyapancha
Padma								
Pushpa		Bhadra	Bhadra	Bhadra		Subhadra	Subhadra	Subhadra
Bhadra	Bhadra					Manava	Manava	Manava
Siva	Siva					Sugriva	Sugriva	Sugriva
Veda	Veda					Harshana	Harita	Harsha
Kuladharana	Kuladharana					Karnikara	Karnikara	Karnikara
Sukhanga	Sukhanga					Padarddhika	Padarddhika	Padarddhika
Darbha	Darpa					Shyama-	Shyama-	(Sama)
Kausika	Kausika				Sribhadra	bhadra	bhadra	Shyamabhadra
	Sribhadra							
Saukhyaka	Saukhyaka							

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Manasara	Mayamatam	Silparatnam	Isanasiva Gurudeva	Suprabheda	Dipta Tantra	Visvakarma	Matsya Puran	Samarangana
		Jayabhadra		Jayabhadra	Jayabhadra	Jayabhadra	Yajnabhadra	Yajnabhadra
Jayala	Garbha					Nandana	Nandana	Nandana
Malika	Malya					Simha	Simha	Simha
Malakriti	Malyadbhuta			Tridhavritta				
	Almkrita							
Dhanada	Dhana							
Dhanyagara								
Subhusana	Subhusana							
Bhushana (?)								
Harmya								
Sringara								
Pragata								
Drona	Drona							
Kharvata	Kharvata							
Srirupa	Srirupa							
Mangalya	Mangalya							
Srivisala								
Somarka								
	Srugakhya							
	Mangala							
	Marga							
	Saubhadra							
	Sundara							
	Sadharana							
	Saumya							
	Isvarakanta							

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TABLE III

Adhisthanas—Bases

Samarangana Sutradhara	Isana-siva Guru-d. Paddhati	Mayamatam	Silparatnam	Manasara	Suprabheda	Kasyapasilpam	Vaikhanasagama
Padabandha	Padabandha	Padabandha	Padabandha	Padabandha	Padabandha	Padabandha	Padabandha
		Uragabandha		Uragabandha			
Pratikrama		Pratikrama		Pratikrama	Pratikrama	Pratikrama	Pratikrama
		Padma Kesara	Ambhoja Kesara	Padma Kesara		Ambhoja Kesara	
	Pushkala	Pushpa-pushkala		Pushpa pushkala		Pushpa pushkala	Pushpabandha
				Sribandha		Sribandha	Sribandha
Sribandha	Sribandha	Sribandha				Manchavandha	
		Manchabandha	Manchakabandha	Manchabandha		Srikanta	
		Srikanta	Srikanta	Srikanta		Srenibandha	
		Srenibandha		Srenibandha			
		Padmabandha	Abjabancha	Padmabandha	Padmabandha	Abjavandha	Padmabandha
		Vaprabandha	Vaprabandha	Vaprabandha		Vaprabandha	
Vedibandha	Vaprabandha	Kalasa	Kalasabandha	Kumbhabandha		Kalasavandha	
				Vajrabandha			
				Sribhoga		Srikara	
				Ratnabandha			
				Pattabandha			
				Kukshi bandha			
				Kampabandha			
				Kumudabandha			
				19			
			Pratimanchaka			Nalinakanta	
			Galamanchaka			Prati Sundara	
			Upanarahita				
			Skandakanta			Sri Saundarya	
			Pratyutpan-nakrama			Skanda-Skanda	

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Samarangana Sutradhara	Isana-Siva Guru-d. Paddhati	Mayamatam	Silparatnam	Manasara	Suprabheda	Kasyapasilpam	Vaikhanasagama
			Trikarna				
	Nagabandha		Nagabandha			Pratibandha	Pratibandha
	Pratibandha	Pratibandha	Pratibandha			Prativaktra	Kapotabandha
	Kapotabandha	Kapotabandha	15		Charubandha	Srikanthanta	
	Charubandha	14			4		
	8					Karirabandha	
Kshurabandha						Ambuja Kanta	
——						—21	

TABLE IV

Upapithas (Pedestals)

						Vedikabhadra
	Vedibhadra	Vedibhadra	Vedibhadra		Pratibhadra	
	Pratibhadra	Pratibhadra	Pratibhadra			
			Manoha Bhadra			
			Each subdivided			
			into 12			
	Subhadra	Subhadra			Saubhadra	
	Each sub-	Prati Sundara			Pratisundara	
	divided into	Kalyana Karana				Kapotasana
	6	5				Padmasana
						Bhadrasana

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TABLE V

Pillars

Visvakarma P. and Puranas	Bṛihat Samhita	Samarāngana	Suprabhedāgama
Ruchaka	Ruchaka	...	...
Vajra	Vajra	...	...
Dvi-Vajra	Dvi-Vajra	...	...
Pralinaka	Pralinaka	...	...
Vṛitta	Vṛitta	...	...
...	...	Kuberakānta	...
...	...	Padmaka	...
...	...	Ghaṭa-Pallava	...
...	...	Sri-dhara	...
...	...	...	Srikara
...	...	...	Chandrakānta
...	...	...	Saumukhya
...	...	...	Priyadarsana
...	...	...	Subhamkari
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...

Kasyapa	Silparatna	Isana-Siva	Mayamatam	Mānasara	Atri Samhita
...	...	...	...	...	Samavṛitta
Chandrakānta	Chandrakānta	Chandrakānta	...	...	Ekānta
...	Vajrakānta	Vajrakānta	Saumya	...	Vajra
...	...	...	...	...	Priyadarsana
...	...	...	...	...	Gokarsha
Brahmakānta	Brahmakānta	Brahmakānta	Brahmakānta	Brahmakānta	Komala
Vishnukānta	Vishnukānta	Vishnukānta	Vishnukānta	Vishnukānta	Nāgahasta
Sivacchanda	Isakānta	Isakānta	...	Sivakānta	Sphuṭavṛitta
Rudrakānta	Rudrakānta	Rudrakānta	Rudrakānta	Rudrakānta	Tālavṛintaka
Indrakānta	Skandakānta	Skandakānta	Indrakānta	Skandakānta	Caturanga
...	Bhānukānta	Bhānukānta	...	...	Avacchanda
...	Padmāsana	Padmāsana	Padmāsana	...	Caturavedika
...	Bhadrakānta	Bhadrakānta	Bhadraka	...	Vāyuparita
...	Padma	Padma	Padma	Padmakānta	...
Chatrakhanda	Chitrakhanda	Chitrakhanda	Chitrakhanda	Chitrakarna	...
Srikaṇṭha	Sribandha	Srikhanda	Srikhanda	Chitraskambha	...
Manda	Dandapāda	Dandapāda	Danda	...	Soḍashāsra
...	Sri-vatsa	...	...	...	...
Kshepana	Paṭṭa-kshepana	...	...	...	...
...	Ratna	Ratna (?)	...	...	...
Sundupāda	...	Sundupāda	Sundupāda	...	Salākāpindika
Pindipāda	...	Bhindipāda	Pindi Pāda	...	Pindi Pāda
Srivajra	...	Sri-Vajra	...	...	...
...	...	Vajrapāda	Vajrastambha	...	...
Gajapāda	...	Ulukhalapāda	...	...	...
...	...	...	...	Pālikastambha	...
Kumbha	...	...	...	Kumbhastambha	...
...	...	...	...	Koṭastambha	...
...	...	...	...	Virakaṇṭha	...

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TABLE VI

Gopurams

Silparatna	Isana-siva-Guru	Mayamatam	Kāsyapa	Mānasāra
...	...	...	...	Sri Bhoga
Sri Mandira etc.	Srimandira	Mātrakānda	Mātradanda	...
...	Sri Niketana	Chaturmukha	Chaturmukha	...
(No detail)	Sumangala	...	...	...
...	Visāla	Sri-Visāla	Sri-Visāla	Sri-visāla
...	Bhavyā	Srikara	...	Vishnukānta
...	Paushṭika	Ratikānta	Kānta	Indrakānta
...	Sumanda	Kānta-Vijaya	Vijaya	Brahmakānta
...	Parikuṭa	Vijayavisālaka	Vijayavisāla	Skandakānta
...	Subhadra	Visālālaya	Visālālaya	Sikhara
...	Bhadrakalyāna	Bipratikānta	Vipratikānta	Saumyakānta
...	Bhadrasundara	Srikānta	Srikānta	
...	...	...	...	2 others not mentioned
...	...	Srikesa	...	
...	...	Kesavisālaka	Kesavisālaka	...
...	...	Svastika	Svastika	...
...	...	Disasvastika	...	...
...	...	Marddala	...	...

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TABLE VII

A. Ekasāla Houses

Visvakarma-Prakāsa	Matsya Purana	Brihat Samhita	Samarāngana Sutradhāra	Mayamatam	Silparatna
Dhruba	Not mentioned	Not mentioned	Dhruva	...	Dhruva
Dhanya	...	...	Dhanya	...	Dhanya
Jaya	...	...	Jaya	...	Jaya
Nanda	...	...	Nanda	...	Nanda
Khara	...	...	Khara	...	Khara
Kānta	...	...	Kānta	...	Kānta
Sri-Pada	...	...	...	...	...
Suvaktra	...	...	Sumukha	...	...
Durmukha	...	...	Durmukha	...	Durmukha
Krura	...	...	Krura	...	...
Supaksha	...	...	Supaksha	...	Supaksha
Dhanada	...	...	Dhanada	...	Dhanada
Kshaya	...	...	Kshaya	...	Kshaya
Ākranda	...	...	Ākranda	...	Ākrānta
Vipula	...	...	Vipula	...	Vipula
Vijaya	...	...	Vijaya	...	Vijaya
...	...	...	Monorama	...	...
...	...	...	...	...	Sukha
...	...	...	...	...	Visāla
...	...	...	...	...	Vyāsa
...	...	...	...	Dandaka	...
...	...	...	...	Maulika	...
...	...	...	...	Svastika	...
...	...	...	...	Chuturmukha	...

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B. Dvisāla Houses

Visvakarma Prakāsa	Matsya Purana	Bṛihat Samhita	Samarāngana	Mayamatam	Silparatna
Siddhārtha	Siddhārtha	Siddhārtha	Siddhārtha	Dandavaktra	Siddhārtha
Yamasurya	Yamasurya	Yamasurya	Yamasurya	...	Yamasurya
Danda	Danda	Danda	Danda	Merukānta	Danda
Vāla	...	Vāla	Vāla	Maulibhadra	Vāta
Gṛihachulli	Chulli	Gṛihachulli	Chulli	...	Gṛihachulli
Kācha	..	Kācha	Kācha	...	Yamadaivata
Sobhana	...	...	...	...	...
Kānta	...	...	...	...	...
Kumbha	...	...	...	...	...
Nanda	...	...	...	...	...
Samkha	...	...	...	...	...
Samputa	...	...	...	...	...
...	Dhana	...	...	...	...
...	Vajra	...	...	...	...

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C. Trisāla Houses

Visvakarma	Matsya Purana	Brihat Samhita	Samarāngana	Mayamatam	Silparatna
Hiranyanābha	...	Hiranyanābha	Hiranyanābha	...	Hiranyanābha
Sukshetra	Sukshetra	Sukshetra	Sukshetra	...	Sukshetra
Chulhi	...	Chulli	Chulli	...	Sula
Pakshaghna	Pakshaghna	Pakshaghna	Pakshaghna	...	Pakshaghna
...	Vsāla	...	...	...	...

D. Chatuḥsāla Houses

Sarvatobhadra	Sarvatobhadra	...	...	...	...
Nandyāvarta	Nandyāvarta	Same as Mat.	Same as	Same as	Same as
Vardhamāna	Vardhamāna	Purana	Mat. Purana	Matsyapurana	Matsyapurana
Svastika	Svastika	...	with many	...	...
Ruchaka	Ruchaka	...	sub-divisions	...	...

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ERRATA

P. 4—Footnote 6—In place of '(a)' put 'and'

P. 5—Para 2— l. 1—In place of 'Tretā' put 'Kṛita'.

P. 8—f. n.(11)—In place of "chap. II" put "III".

P. 12—l. I—In place of "an 13. 14 ; (681-82)" put "81-82".

P. 20—Foot note 23—In place of "1906—7 pp. 119 ff" put "1910-11, p. 40 ff".

P. 21—l. 16—Omit 's' after 'Gṛihya'.

P. 64—l, last but one—For 'special' put 'especial'

Para 3—l. 2—Add 'by' after 'was made'.

P. 75—f. n. 50—omit 'e' at the end of 'Megasthenese'.

P. 88—Add 'a' after 'Matsya Puran' in Para 2.

P. 91—f. n. 68—For 'Bṛihat Samita' put 'Bṛihat Samhita'.

P. 92—f. n. 69—For 'Visvakarmā put 'Visvakarma'.

P. 95—f. n. 72, l. 1—For 'South' put 'Southern'.

P. 98—para 1—last line—For 'XXVI' put 'XXVII'.

P. 100—Para 2—l. 8—For 'Amsubedha' put 'Amsubheda'.

P. 101—l 16—For 'Afer' put 'After'.

P. 117—l. 8—For 'Prahlād' put 'Prahlāda'.

P. 118—Para 2—l. 9—Omit 's' after 'indicates'.

P. 127—Para no. 26 should be read after para 25 page 128.

P. 130—no. 7—For "B. S. 120-23" read (B. S. 53. 120-123).

P. 138—last para—l. 1—put 'on' after 'works'.

P. 143—f. n.—For 'Ānyasarvam' read 'Anyasarvam'

P. 145—Para 2—l. 3—put 'a' after 'Vastuvidy'.

P. 159—f. n. 116—l. 2—For 'there' read 'three'.

P. 167—l. 1—omit 'As'.

P. 170—f. n. 133—For '12' read '12 or 13'.

P. 172—l. 15—For 'Varities' read 'Varieties'.

P. 199—last para—l. 9—For 'it' read 'the similarity between Vitruvius and Indian Vastuvidya'.

P. 231—l. 4—For 'ya' read 'yā'.

P. 236—l. 5—Add 's' after 'formula'.

P. 241—l. 8—Add 'i' after 'Sr'.

P. 248—last para—l. 11—After 'the door or' put 'proportion'

P. 257—l. 7 and 13—For '5 above' read "6 above".

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P. 259—l. 7—For '5' read '51'.

P. 294—last but two lines and foot note—For '208' read '205'

P. 304—l. 4—For 'variably' read 'invariably'.

P. 304—l. 22—Instead of 'copied their chaityas from' read 'copied the chaityas of'

P. 312—l. 19—Instead of 'Second' read 'Third'.

P. 315—number of page misprinted as 15.

P. 323—Verse no. 17—Omit bracket after 'yaḥ'

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ADDITIONAL CORRECTIONS

P. 4 f. n. 6 ... *Add* 'Brahmanda Purana' (Cal. Ed.) Ch. VIII.

P. 87 *l.* 3 ... *Add* "Dravidian, though not" before "South Indian recension' etc,

P. 135 *l.* 23 ... *For* 'It was these works which" read "works on silpasastras were".

P. 138 Para 2 *l.* 2 ... *For* 'exactly copied' read 'very similar to those'.

P. 140 ... *For* 'Sasvata Samhita' read 'Satvata Samhita' (also in Index p. 370).

P. 177 Para 2 *l.* 8 ... *Omit* "and the Mayamatam".

P. 211 *l.* 19 ... *For* 'Stupi' read "Sikhara".

P. 217 Para 2 *l.* 12 ... *Add* 'we have got an octagonal temple at Bhabua in Bihar (Shahabad) of the Gupta period".

P. 219 f. n. *For* 'Symbolism of the stupi' read 'Symbolism of the dome'.

P. 251 After end of para 1 ... *Add* 'At Mohenjodaro the largest bricks are also $20\frac{1}{4}'' \times 10\frac{1}{2}'' \times 3\frac{1}{2}''$.

P. 261 last para *l.* 2 ... *For* 'mean' read "originally meant". Then after the sentence add "though in many such works, structures of these classes are really mentioned and described".

P. 268 ... *Add* after first sentence, para 2 "The meaning of Prasada is clear from the Brahmanda Purana (Cal. Edition) Chap. VIII, which relates that "Men built Prasadas after the model of trees whose branches were slanting (Tiryak) i.e., walls of Prasadas were slanting, as the temple Sikharas of North India".

an

P. 305 ... *For* "Didarnagar" read "Dildargunge".

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